6th ESSD CONGRESS
MILAN 14-15 OCT 2016

Deglutology: from science to clinical practice

WORKSHOPS 12 OCT 2016
PRECONGRESS COURSE 13 OCT 2016

www.essd2016.org
Do you screen for dysphagia?
Please join us in collecting and sharing data from around the world on screening procedures and practices.
Results will be sent to participants and posted on the ESSD website

www.worldswallowingday.org
Dear colleagues and friends,

On behalf of the Local Organizing committee and the ESSD it gives us great pleasure to welcome you to the 6th ESSD Congress "Deglutology: from science to clinical practice" and the Precongress course on "Tracheostomy and nasogastric tube" in Milano, Italy, 12-15 October 2016. This year a Workshop: "Instrumental assessment for oropharyngeal dysphagia: decision making for management and rehabilitation" will take place the day before the Pre-Congress course to promote the best clinical practice for our patients with OD.

The aim of the congress is to present the most recent clinical and scientific evidence as well as new technologies and strategies to support clinicians in their everyday practice. Deglutology is a new field and clinicians and researchers with different background need to work together to continuously improve scientific knowledge, clinical skills and health management.

Thank you for supporting the congress and for sending your best studies to be presented and debated here. This year we have more than 210 abstracts presented from all around the world and most of them of the highest quality, it has been a very strict and difficult task to review and rate all this excellent work.

The Congress will take place in Milan University main building, a previous hospital, founded in 1456: modern technologies are integrated in an historic building, providing a remarkable environment to share ideas, knowledge and friendship, the basic elements to develop new projects. Finally, let us welcome you to Milano, the financial and fashion capital of Italy. The city where Leonardo Da Vinci used to work, is an international city with a characteristic blend of historic and modern buildings; famous for its Cathedral, the Duomo, and its bars and restaurants, Milano will welcome you and make your stay a memorable experience.

We sincerely wish that you enjoy your stay and find the congress fruitful and interesting,

Antonio Schindler, MD, ESSD Vice-President
Chair of the Congress

Pere Clavé, MD, PhD, ESSD President
Co-Chair of the Congress
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<td>Notes</td>
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<td>Map</td>
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Committees

Local Organizing Committee

Antonio SCHINDLER, Milano, Phoniatrician
Enrico ALFONSI, Pavia, Neurologist
Roberto ANTENUCCI, Piacenza, Physical Med. & Rehab.
Umberto BARILLARI, Napoli, Phoniatrician
Daniele FARNETI, Rimini, Phoniatrician
Elisabetta GENOVESE, Modena, Phoniatrician
Paolo ORLANDONI, Ancona, Nutritionist
Simona RAIMONDO, Torino, SLP
Sergio RISO, Vercelli, Nutritionist

ESSD Board

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Renée SPEYER, Secretary, Netherlands
Laura BAIJENS, Treasurer, Netherlands
Rainer DZIEWAS, Vice-president, Germany
Emilia MICHOU, Vice-president, UK
Antonio SCHINDLER, Vice-president, Italy
Margaret WALSHE, Vice-president, Ireland
Olle EKBERG, Sweden
Shaheen HAMDY, UK
Guntram ICKENSTEIN, Germany
Nathalie ROMMEL, Belgium
Eric VERIN, France

Scientific Committee

Chairmen:
Antonio SCHINDLER, Chairman, Italy
Pere CLAVÉ, Chairman, Spain

Members:
Enrico ALFONSI, Italy
Roberto ANTENUCCI, Italy
Joan ARVEDSON, USA
Laura BAIJENS, Netherlands
Martin BRODSKY, USA
Roberto DANTAS, Brazil
Numan DEMIR, Turkey
Rainer DZIEWAS, Germany
Olle EKBERG, Sweden
Daniele FARNETI, Italy
Bruno FATTORI, Italy
Ana Maria FURKIM, Brazil
Daniela GINOCCHIO, Italy
Shaheen HAMDY, UK
Celia HARDING, UK
Guntram ICKENSTEIN, Germany
Makoto INOUE, Japan
Hanneke KALF, Netherlands
Christian LEDL, Germany
Tim MCCULLOCH, USA
Emilia MICHOU, UK
Francesco MOZZANICA, Italy
Andrea NACCI, Italy
Emily PLOWMAN, USA
Peter POKIESER, Austria
Laia ROFES, Spain
Nathalie ROMMEL, Belgium
Eiichi SAITOH, Japan
Roberta SILVA, Brazil
David SMITHARD, UK
Renée SPEYER, Netherlands
Kouichirou UEDA, Japan
Karen VAN HULST, Netherlands
Eric VERIN, France
Margaret WALSHE, Ireland
Elizabeth WARD, Australia
Virginie WOISARD, France
Programme Overview

**Workshop**

- University of Milan, WEDNESDAY 12 Oct

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>07:30-08:00</td>
<td>Registration</td>
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<tr>
<td>08:00-08:30</td>
<td>Indications for instrumental evaluation</td>
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<tr>
<td>08:30-09:00</td>
<td>Assessment of swallowing with FEES and VFS</td>
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<td>09:00-09:30</td>
<td>How to prepare and carry out FEES</td>
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<td>How to prepare and carry out VFS</td>
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<td>10:00-10:30</td>
<td>Coffee break</td>
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<td>10:30-11:00</td>
<td>FEES demonstration normal swallow</td>
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<td>11:00-11:30</td>
<td>Residue scores in FEES and VFS</td>
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<td>FEES interpretation workshop</td>
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<td>12:00-12:30</td>
<td>LUNCH</td>
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<td>Mechanisms underlying residue</td>
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<tr>
<td>14:00-14:30</td>
<td>Indications for tube feeding</td>
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<td>14:30-15:00</td>
<td>Coffee break</td>
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<tr>
<td>15:00-15:30</td>
<td>Looking for the evidence: Rehabilitation management based on FEES and VFS</td>
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<tr>
<td>15:30-16:00</td>
<td>Improving airway defense mechanisms in dysphagia management</td>
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<tr>
<td>16:00-16:30</td>
<td>Live demonstration of EMST</td>
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<tr>
<td>16:30-17:00</td>
<td>Looking for the evidence: Treatment planning for oral, pharyngeal and UE stages</td>
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**Precongress Course**

- University of Milan, THURSDAY 13 OCT

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>07:30-08:00</td>
<td>Registration</td>
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<tr>
<td>08:00-08:30</td>
<td>Tracheostomy options nowadays</td>
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<tr>
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<td>Post-extubation dysphagia</td>
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<tr>
<td>09:00-09:30</td>
<td>Impact of the cannula on the physiology of swallowing</td>
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<tr>
<td>09:30-10:00</td>
<td>Impact of feeding tube on physiology of swallowing</td>
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<tr>
<td>10:00-10:30</td>
<td>Coffee break</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Clinical assessment of swallowing in patients with tracheostomy</td>
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<tr>
<td>11:00-11:30</td>
<td>Instrumental assessment of swallowing in patients with tracheostomy</td>
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<tr>
<td>11:30-12:00</td>
<td>Weaning tracheostomy tubes after stroke</td>
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<tr>
<td>12:00-12:30</td>
<td>Weaning tracheostomy tubes after severe acquired brain lesions</td>
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<td>12:30-13:00</td>
<td>LUNCH</td>
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<tr>
<td>13:00-13:30</td>
<td>S1 Industry symposium</td>
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<tr>
<td>13:30-14:00</td>
<td>Tracheostomy in head and neck cancer patients with OD</td>
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<td>14:00-14:30</td>
<td>Tracheostomy after partial laryngectomy: keep it or remove it?</td>
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<td>Tracheostomy in children with oropharyngeal dysphagia</td>
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<td>15:30-16:00</td>
<td>Weaning feeding tube in HNC patients</td>
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<td>Rehabilitation in ALS: tracheostomy and gastrostomy</td>
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<tr>
<td>16:30-17:00</td>
<td>Tube weaning in children</td>
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<tr>
<td>17:00-17:30</td>
<td>Welcome reception/opening exhibition</td>
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<td>Time</td>
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<tr>
<td>07:30-08:30</td>
<td>Registration</td>
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<tr>
<td>08:30-09:00</td>
<td>01 Neurophysiology of swallowing</td>
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<tr>
<td>09:00-09:30</td>
<td>Coffee break</td>
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<tr>
<td>09:30-10:00</td>
<td>03 Evidence in Screening appliication</td>
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<tr>
<td>10:00-10:30</td>
<td>04 Free papers 2, Instrumental assessment and dysphagia diagnosis</td>
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<tr>
<td>10:30-11:00</td>
<td>Coffee break</td>
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<tr>
<td>11:00-11:30</td>
<td>05 Swallowing viewed through HRM</td>
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<td>11:30-12:00</td>
<td>LUNCH</td>
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<tr>
<td>12:00-12:30</td>
<td>S4 Industry symposium</td>
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<tr>
<td>12:30-13:00</td>
<td>LUNCH</td>
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<tr>
<td>13:00-13:30</td>
<td>06 Parallel Poster Sessions A, B, C, D, E</td>
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<tr>
<td>13:30-14:00</td>
<td>07 Free Papers 3, Dysphagia after HNC treatment</td>
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<tr>
<td>14:00-14:30</td>
<td>Coffee break</td>
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<tr>
<td>14:30-15:00</td>
<td>08 ESSD News/ Dysphagia-malnutrition interaction</td>
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<tr>
<td>15:00-15:30</td>
<td>Coffee break</td>
</tr>
<tr>
<td>15:30-16:00</td>
<td>09 Pathophysiology of aspiration pneumonia</td>
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<tr>
<td>16:00-16:30</td>
<td>10 Esophageal dysphagia</td>
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<tr>
<td>16:30-17:00</td>
<td>S4 Industry symposium</td>
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<tr>
<td>17:00-17:30</td>
<td>LUNCH</td>
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<tr>
<td>17:30-18:00</td>
<td>Congress dinner</td>
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<tr>
<td>18:00-18:30</td>
<td>11 Free papers 4, Physiology and neurophysiology &amp; stroke and brain damage</td>
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<tr>
<td>18:30-19:00</td>
<td>Coffee break</td>
</tr>
<tr>
<td>20:30</td>
<td>S4 Industry symposium</td>
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**6th ESSD Congress, Deglutology: From Science to Clinical Practice**

**University of Milan, FRIDAY 14 OCT**

- **Registration**
- **01 Neurophysiology of swallowing**
- **Coffee break**
- **03 Evidence in Screening application**
- **04 Free papers 2, Instrumental assessment and dysphagia diagnosis**
- **Coffee break**
- **05 Swallowing viewed through HRM**
- **LUNCH**
- **S4 Industry symposium**
- **06 Parallel Poster Sessions A, B, C, D, E**
- **07 Free Papers 3, Dysphagia after HNC treatment**
- **Coffee break**
- **08 ESSD News/ Dysphagia-malnutrition interaction**
- **Coffee break**
- **09 Pathophysiology of aspiration pneumonia**
- **10 Esophageal dysphagia**
- **S4 Industry symposium**
- **Congress dinner**

**University of Milan, SATURDAY 15 OCT**

- **ESSD General Assembly**
- **11 Free papers 4, Physiology and neurophysiology & stroke and brain damage**
- **Coffee break**
- **12 Paediatric dysphagia: cerebral palsy**
- **13 Free Papers 5, Dysphagia in neurodegenerative diseases**
- **14 Telepractice in swallowing rehabilitation**
- **LUNCH**
- **S4 Industry symposium**
- **15 Parallel Poster Sessions, F, G, H, I, J**
- **16 Free papers 6, Dysphagia in geriatric patients**
- **Coffee break**
- **17 Management of head & neck cancer patients**
- **18 Rehabilitation in neurological dysphagia**
- **Closing ceremony/Awards**
- **Close**
### Scientific Programme

**WEDNESDAY OCTOBER 12**

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<th>Event</th>
<th>Chairs</th>
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</thead>
<tbody>
<tr>
<td>08:30 - 09:00</td>
<td>Indications for instrumental evaluation</td>
<td>Chairs: P. Clavé - Speaker: N. Rommel</td>
</tr>
<tr>
<td>09:00 - 09:30</td>
<td>Assessment of swallowing with FEES and VFS</td>
<td>Chairs: P. Clavé - Speakers: A. Schindler, F. Barbiera</td>
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<tr>
<td>09:30 - 10:00</td>
<td>How to prepare and carry out FEES</td>
<td>Chairs: P. Clavé - Speaker: G. Ickenstein</td>
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<tr>
<td>10:00 - 10:30</td>
<td>How to prepare and carry out VFS</td>
<td>Chairs: P. Clavé - Speakers: O. Ekberg, P. Pokieser</td>
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<tr>
<td>10:30 - 11:00</td>
<td>Coffee break</td>
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<tr>
<td>11:00 - 11:30</td>
<td>FEES demonstration normal swallow</td>
<td>Chairs: A. Schindler - Speakers: D. Farneti, A. Schindler</td>
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<tr>
<td>11:30 - 12:00</td>
<td>Residue scores in FEES and VFS</td>
<td>Chairs: A. Schindler - Speakers: D. Farneti, A. Schindler</td>
</tr>
<tr>
<td>12:00 - 12:30</td>
<td>FEES interpretation workshop</td>
<td>Chairs: A. Schindler - Speakers: L. Baijens, R. Dziewas</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Lunch</td>
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<tr>
<td>Time</td>
<td>Session</td>
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<tr>
<td>13:30 - 14:00</td>
<td>VFS interpretation workshop</td>
<td>L. Baijens</td>
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<tr>
<td>14:00 - 14:30</td>
<td>Mechanisms underlying penetration/aspiration</td>
<td>L. Baijens</td>
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<tr>
<td>14:30 - 15:00</td>
<td>Mechanisms underlying residue</td>
<td>L. Baijens</td>
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<tr>
<td>15:00 - 15:30</td>
<td>Indications for tube feeding</td>
<td>L. Baijens</td>
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<tr>
<td>15:30 - 16:00</td>
<td>Coffee break</td>
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<tr>
<td>16:00 - 16:30</td>
<td>Looking for the evidence: Rehabilitation management based on FEES and VFS</td>
<td>R. Dziewas</td>
</tr>
<tr>
<td>16:30 - 17:00</td>
<td>Treatment planning for impaired hyoid elevation</td>
<td>R. Dziewas</td>
</tr>
<tr>
<td>17:00 - 17:30</td>
<td>Improving airway defense mechanisms in dysphagia management</td>
<td>R. Dziewas</td>
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<tr>
<td>17:30 - 18:00</td>
<td>Looking for the evidence: Treatment planning for oral, pharyngeal and UE stage</td>
<td>R. Dziewas</td>
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<tr>
<td>Time</td>
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<tr>
<td>08:30 - 09:00</td>
<td><strong>P01 Tracheostomy options nowadays</strong></td>
<td>P. Clavé, R. Speyer</td>
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<tr>
<td>09:00 - 09:30</td>
<td><strong>P02 Post-extubation dysphagia</strong></td>
<td>P. Clavé, R. Speyer</td>
</tr>
<tr>
<td>09:30 - 10:00</td>
<td><strong>P03 Impact of the cannula on the physiology of swallowing</strong></td>
<td>P. Clavé, R. Speyer</td>
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<tr>
<td>10:00 - 10:30</td>
<td><strong>P04 Impact of feeding tube on physiology of swallowing</strong></td>
<td>P. Clavé, R. Speyer</td>
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<tr>
<td>10:30 - 11:00</td>
<td><strong>Coffee break</strong></td>
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<tr>
<td>11:00 - 11:30</td>
<td><strong>P05 Clinical assessment of swallowing in patients with tracheostomy</strong></td>
<td>E. Michou, G. Ruoppolo</td>
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<tr>
<td>11:30 - 12:00</td>
<td><strong>P06 Instrumental assessment of swallowing in patients with tracheostomy</strong></td>
<td>E. Michou, G. Ruoppolo</td>
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<tr>
<td>12:00 - 12:30</td>
<td><strong>P07 Weaning tracheostomy tubes after stroke</strong></td>
<td>E. Michou, G. Ruoppolo</td>
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<tr>
<td>12:30 - 13:00</td>
<td><strong>P08 Weaning tracheostomy tubes after severe acquired brain lesions</strong></td>
<td>E. Michou, G. Ruoppolo</td>
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<tr>
<td>13:00 - 14:00</td>
<td>Lunch</td>
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<td>13:30 - 14:00</td>
<td>Industry symposium S1</td>
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<tr>
<td>14:00 - 14:30</td>
<td>P09 Management of tracheostomy in head and neck cancer patients with OD</td>
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<td>Chairs: M. Walshe, E. Verin - Speaker: V. Woisard</td>
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<tr>
<td>14:30 - 15:00</td>
<td>P10 Tracheotomy after partial laryngectomy: keep it or remove it?</td>
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<td>Chairs: M. Walshe, E. Verin - Speaker: G. Ruoppolo</td>
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<td>15:00 - 15:30</td>
<td>P11 Management of tracheostomy in children with oropharyngeal dysphagia</td>
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<td>Chairs: M. Walshe, E. Verin - Speaker: J. Arvedson</td>
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<tr>
<td>15:30 - 16:00</td>
<td>Coffee break</td>
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<tr>
<td>16:00 - 16:30</td>
<td>P12 Weaning feeding tube in HNC patients</td>
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<td>Chairs: A. Schindler, V. Woisard - Speaker: T. McCulloch</td>
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<tr>
<td>16:30 - 17:00</td>
<td>P13 Rehabilitation in ALS: tracheostomy and gastrostomy</td>
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<td>Chairs: A. Schindler, V. Woisard - Speaker: E. Plowman</td>
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<td>17:00 - 17:30</td>
<td>P14 Tube weaning in children</td>
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<td>Chairs: A. Schindler, V. Woisard - Speaker: C. Harding</td>
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<tr>
<td>17:45 - 18:45</td>
<td>Welcome reception/ opening exhibition</td>
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FRIDAY OCTOBER 14

08:30- 09:00  **Session 01. Neurophysiology: Electromyography/fMRI for the study of swallowing**
Chairs: S. Hamdy, I. Battel - Speakers: E. Alfonsi, E. Michou

09:00 - 10:30  **Session 02. Free papers 1: Screening and clinical assessment of OD**
Chairs: Y. Inamoto, E. Michou

02.01  **WATER SWALLOW TEST AND EAT-10 ARE INADEQUATE TO SCREEN DYSPHAGIA IN PATIENTS WITH STEINERT DISEASE**
A. Schindler; M. Zardoni; B. Pasanisi; C. Nascimbene; R. Lorusso; D. Ginocchio; L. Maggi; M. Osio.

02.02  **EATING ASSESSMENT TOOL-10 PREDICTS ASPIRATION IN ADULTS WITH RESPIRATORY DISEASE**
J. Regan; S. Lawson; V. De Aguiar

02.03  **MEALTIME ASSESSMENT SCALE (MAS): DEVELOPMENT AND VALIDATION OF A SCALE FOR MEAL ASSESSMENT**
D. Valentini; N. Pizzorni; M. Gilardone, E. Borghi, M. Tresoldi, F. Mozzanica, A. Schindler

02.04  **INTERNATIONAL STANDARDIZATION OF THE TEST OF MASTICATING AND SWALLOWING SOLIDS IN CHILDREN (TOMASS-C)**
L. van den Engel-Hoek; D. Nogueira; U. Frank; M. Huckabee

02.05  **INTER-RATER RELIABILITY OF THE DYSPHAGIA OUTCOME AND SEVERITY SCALE (DOSS): EFFECTS OF SLT EXPERIENCE, AUDIO-RECORDING AND TRAINING**
A. Zarkada; J. Regan

02.06  **CLINICAL ASSESSMENT OF EFFORTFUL SWALLOW PERFORMANCE; INTER-RATER RELIABILITY AND COMPARISON TO SURFACE ELECTROMYOGRAPHY DATA**
S.K. Archer; C.H. Smith; D.J. Newham

02.07  **RELATIONSHIPS AMONG NUTRITION STATUS, ORAL FUNCTIONS AND BODY FUNCTIONS IN ADVANCED CANCER PATIENTS**
H.T Taniguchi; K.M. Matsuo; K.N. Nakagawa; M.K. Kanazawa; J.F. Furuya; S.M. Minakuchi
02.08 EVALUATING THE RELIABILITY AND VALIDITY OF THE SWALLOWING QUALITY OF LIFE QUESTIONNAIRE USING RASCH ANALYSIS
   R. Cordier; R. Speyer; A. Schindler; S. Hamdy; E. Michou; B.J. Heijnen; L.W.J Baijens; A. Karaduman; A. Joosten

02.09 HEALTH-RELATED QUALITY OF LIFE IN DYSPHAGIA
   R. Speyer; E. Jones; B. Kertscher; D. Denman; K. Swan; R. Cordier

10:30 - 11:00 Coffee break

11:00 - 11:30 Session 03. Evidence in Screening application
   Chairs: M. Walshe, K. Van Hulst - Speakers: J. Arvedson, R. Speyer

11:30 - 12:30 Session 04. Free papers 2: Instrumental assessment and dysphagia diagnosis
   Chairs: D. Farneti, R. Dziewas

04.01 PRESSURE FLOW ANALYSIS AS A METHOD TO ASSESS ESOPHAGEAL FUNCTION
   C. Scheerens, T. Omari, C. Broers, J. Tack, N. Rommel

04.02 THE INFLUENCE OF AGE CATEGORY, GENDER, LOCATION, VOLUME, EFFORT AND CONSISTENCY ON PERCENTAGE OF MAXIMAL LINGUAL SWALLOWING PRESSURES (PSP) IN HEALTHY BELGIAN ADULTS
   J. Vanderwegen, G. Van Nuffelen, C. Guns, R. Elen

04.03 INFLUENCE OF PHARYNGEAL PROPULSIVE FORCES ON PREDICTIVE ABILITY OF INTRABOLUS PRESSURE TO IDENTIFY STRICTURES OF THE PHARYNGO-ESOPHAGEAL JUNCTION
   M.M. Szczesniak; P. Wu; J. Maclean, T. Zhang; T. Omari; I.J. Cook

04.04 EFFECT OF AGE, GENDER, VOLUME AND CONSISTENCY ON WHITE-OUT DURATION IN HEALTHY SUBJECTS
   R. Lorusso; T. Zambon; F. Mozzanica; A. Schindler

04.05 CLINICIAN RATINGS OF RESIDUE ON FEES: YEARS OF EXPERIENCE DOES NOT AFFECT RATINGS
   J.M. Pisegna; A. Kaneoka; J.C. Borders; S.E. Langmore
04.06 QUANTIFYING VALLECCULAR RESIDUE ON FEES AND MBS VIDEOS  
J.M. Pisegna; W.G Pearson; M.B. O’Dea; E. McNally; R. Scheel; S.E. Langmore

12:30 - 13:00 Session 05. Swallowing viewed through HRM/ Combining HRM and ecography  

13:00 - 14:30 Lunch

13:30 - 14:30 Industry symposium S2

14:30 - 15:00 Session 06A. Poster session A: Screening and clinical assessment of OD  
Chairs: D. Melgaard, G. Ickenstein

14:30 - 15:00 Session 06B. Poster session B: Instrumental assessment and dysphagia diagnosis  
Chairs: D. Farneti, E. Verin

14:30 - 15:00 Session 06C. Poster session C: Dysphagia in children  
Chairs: R. Zaman, L. Van Engel-Hoek

14:30 - 15:00 Session 06D. Poster session D: Physiology and neurophysiology  
Chairs: E. Alfonsi, S. Hamdy

14:30 - 15:00 Session 06E. Poster session E: Dysphagia in neurodegenerative diseases  
Chairs: C. Ledl, H. Kalf

15:00 - 16:00 Session 07. Free papers 3: Dysphagia after HNC treatment  
Chairs: A. Nacci, A. Schindler
07.01  SYNK: SWALLOWING EXERCISES AND RESISTANCE TRAINING FOR HEAD AND NECK CANCER PATIENTS DURING RADIO THERAPY. A STATUS
S. Fredslund, S.O. Dalton, C. Johansen, L. Wessel

07.02  PREDICTIVE FACTORS FOR POSTTREATMENT SWALLOWING DYSFUNCTION AFTER RADIO(CHEMO)THERAPY FOR HEAD AND NECK CANCER
A. Goeleven, D. Nevens, F. Duprez, W. De Neve; E. Dejaeger; R. Braeken; E. Decabooter; M. De Smet; L. Luttters; S. Nuyts

07.03  FUNCTIONAL OUTCOMES AND QUALITY OF LIFE AFTER TRANSORAL ROBOTIC SURGERY IN PATIENTS WITH OROPHARYNX AND SUPRAGLOTTIC CANCER
D. Geeurickx, A. Goeleven, J. Meulemans, V. Vander Poorten

07.04  LONG TERM RESULTS OF SUPRAGLOTTIC LARYNGOPLASTY IN TREATMENT OF CHRONIC ASPIRATION IN IRRADIATED NASOPHARYNGEAL CARCINOMA PATIENTS
P. Ku, A. Vlantis, V. Abdullah, M. Tong

07.05  FREE WATER PROTOCOLS FOR ADULTS WITH DYSPHAGIA: ESTABLISHING THE EVIDENCE FOR IMPLEMENTATION
B. McArdle, T. Wiesinger, C. Humphreys, M. Walshe

07.06  INTRA-PROCEDURAL GASTRO-OESOPHAGEAL JUNCTION (GOJ) DISTENSIBILITY MEASUREMENT PREDICTS SHORT-TERM OUTCOME OF PNEUMATIC DILATATION
M.M. Szczesniak; P. Wu; P. Craig; L. Choo; J. Engelman; B. Terkasher; J. Hui; I.J. Cook

16:00 - 16:30  Coffee break

16:30 - 17:00  Session 08. ESSD News/ Dysphagia-malnutrition interaction
Chairs: G. Ickenstein, K. Matsuo, O. Ekberg - Speakers: P. Clavé, S. Carrión

17:00 - 17:30  Session 09. Cough and other lung protection mechanisms / Oral health and lung infection correlation.
17:30 - 18:00  
**Session 10. Esophageal dysphagia: examined by HRM/ and non-oncological surgery**


18:00 - 19:00  
**Industry symposium S3**

SATURDAY OCTOBER 15

08:00- 09:00  
**ESSD GENERAL ASSEMBLY**

09:00- 10:30  
**Session 11. Free papers 4: Physiology and neurophysiology & stroke and brain damage**

Chairs: R. Dziewas, E. Alfonsi

11.01  
**IS EXCITABILITY INDUCED BY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION OF THE SWALLOWING MOTOR CORTEX PREDICTED BY GENETIC PREDISPOSITION?**

A.R.Z. Raginis-Zborowska; S.H. Hamdy; E.M. Michou; N.P. Pendleton

11.02  
**SWALLOWING FROZEN AND MIXED BOLUS CONSISTENCIES: KINEMATICS IN YOUNG AND OLDER HEALTHY ADULTS**

K.L. Sunday; A.K. Vose; L. Greene; E. Karagiorgos; I.A. Humbert

11.03  
**PROGRESSIVE PHYSIOLOGIC FUNCTIONAL ALTERATIONS IN SWALLOWING IN CORRELATION TO AGE**

A.C. Wuttge-Hannig; C.E.M. Hannig

11.04  
**CORTICAL MECHANISMS FOR THE INTEGRATION OF POSTURE AND SWALLOWING MOVEMENT: A FNIRS STUDY**

M. Yamawaki; G. Matsuda; S. Shibano; I. Dan

11.05  
**THE IMPACT OF VARIOUS CONSISTENCIES ON SWALLOWING SAFETY IN NEUROGENIC DYSPHAGIA**

Ledl Christian; M. Mertl-Roetzer

11.06  
**THE PREVALENCE OF PHARYNGEAL SWALLOWING DISORDERS IN PATIENTS WITH DEMYELINATING DISEASES**

M. Milewska; K. Grabarczyk; T. Czernicki; D. Dziewulska; M. Panczyk; B. Jamróz; J. Chmielewska
11.07 RANDOMIZED CONTROLLED TRIAL OF TDCS FOR THE TREATMENT OF POSTSTROKE DYSPHAGIA
S. Suntrup-Krüger; C. Ringmaier; P. Muhle; T. Warnecke; R. Dziewas

11.08 A SYSTEMATIC REVIEW OF THE EVIDENCE UNDERPINNING THICKENED LIQUID RECOMMENDATIONS IN STROKE CLINICAL PRACTICE GUIDELINES
McCurtin; M. Kavanagh; C. Roche; A. Clifford; F. Murphy; J. Ryan; C. Walsh

11.09 EFFECT OF BUSPIRONE IN PATIENTS WITH INEFFECTIVE ESOPHAGEAL MOTILITY
C. Scheerens; J. Tack; T. Vanuytsel; E. De Langhe; T. Omari; N. Rommel

10:30 - 11:00 Coffee break

11:00- 11:30 Session 12. Telerehabilitation for dysphagia/Telepractice in stroke patients
Chairs: E. Verin, A. Guillen - Speakers: E. Ward, G. Ickenstein

11:30- 12:30 Session 13. Free Papers 5: Dysphagia in neurodegenerative diseases
Chairs: L. Baijens, H. Kalf

13.01 FAMILY CAREGIVERS’ LIVED EXPERIENCE OF OROPHARYNGEAL DYSPHAGIA AS A PRIMARY RESULT OF MULTIPLE SCLEROSIS
K. Bree; A. Sheehy; M. Walshe

13.02 WHAT PEOPLE LIVING WITH ALS THINK ABOUT DYSPHAGIA? AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS OF PATIENTS’ AND CAREGIVERS’ EXPERIENCES
D. Lisiecka; H. Kelly; J. Jackson

13.03 PILOT OBSERVATIONS FROM A MULTIMODAL IMAGING STUDY IN MILD DYSPHAGIC PATIENTS IN EARLY STAGE HUNTINGTON’S DISEASE (HD)
E. Michou; I. Trender-Gerhard; A. Gerhard; D. Craufurd; K. Herholz; S. Hamdy

13.04 ESOPHAGEAL MOTOR DISORDERS IN ATYPICAL PARKINSONIAN SYNDROMES: SYNUCLEINOPATHIES VS. TAUOPATHIES
J. Suntrup; S. Suntrup-Krüeger; A. Pilatus; M. Siemer; J. Bauer; R. Dziewas; T. Warnecke
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<th>Time</th>
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<td>13:00-14:30</td>
<td><strong>Lunch</strong></td>
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<td>14:30-15:00</td>
<td><strong>Session 15F. Poster session F: Dysphagia after HNC treatment</strong></td>
<td>T. McCulloch, E. Ward</td>
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<td>14:30-15:00</td>
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<td>G. Ruoppolo, D. Smithard</td>
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<td>14:30-15:00</td>
<td><strong>Session 15H. Poster session H: Dysphagia in stroke and brain damage</strong></td>
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<td>14:30-15:00</td>
<td><strong>Session 15I. Poster session I: Treatment</strong></td>
<td>E. Wagner-Sonntag, R. Speyer</td>
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<td><strong>Session 15J. Poster session J: Professional roles in dysphagia management</strong></td>
<td>M. Bülow, M. Walshe</td>
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<td>15:00-16:00</td>
<td><strong>Session 16. Free Papers 6: Dysphagia in geriatric patients</strong></td>
<td>D. Smithard, P. Clavé</td>
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16.01 DYSPHAGIA OR PRESBYPHAGIA? A META-ANALYSIS OF SWALLOW TIMING IN THE ELDERLY
A.M. Namasivayam; C.E.A. Barbon; C.M. Steele

16.02 RELATIONSHIPS BETWEEN DECLINE IN ORAL FUNCTIONS AND NUTRITIONAL STATUS IN ELDERLY PATIENTS IN AN ACUTE HOSPITAL
K.M. Matsuo; H.T. Taniguchi; K.N. Nakagawa; M.K. Kanazawa; J.F. Furuya; K.T. Tsuga; K.I. Ikebe; T.U. Ueda; F.T. Tamura; H.N. Nagao; K.Y. Yamamoto; K.S. Sakurai; S.M. Minakuchi

16.03 PREDICTING DYSPHAGIA IN THE FRAIL ELDERLY: RISK FACTORS AND PREDICTORS IN MEDICAL HISTORY AND BEDSIDE EXAMINATION

16.04 DYSPHAGIA AS A SIDE EFFECT OF PHARMACOTHERAPY IN NURSING HOME RESIDENTS
C. Venturini; P. Orlandoni; N. Jukic Peladic; N. Giorgini; C. Cola; D. Sparvoli; D. Fagnani; R. Basile; M. Sestilli

16.05 THE CHANGES OF CORTICAL ACTIVATION IN SWALLOWING AFTER APPLICATION OF HIGH FREQUENCY RTMS IN OLDER ADULTS
J.W. Park; H.J. Kim

16.06 VALIDATION OF INLINE RHEOMETRY WITH THICKENER BASED LIQUIDS FOR DYSPHAGIA
M.Q. Waqas; J. Wiklund; O. Ekberg; M. Stading

16:00 - 16:30 Coffee break

16:30 - 17:00 Session 17. Short & long term impact of RT/Management of OD following RT for H&N patients
Chairs: L. Baijens, B. Arenaz-Bua - Speakers: E. Russi, A. Merlotti, T. McCulloch

17:00 - 17:30 Session 18. Impact of dysphagia management on ALS/Rehabilitation in neurologic dysphagia
Chairs: P. Clavé, E. Plowman - Speakers: A. Chiò, E. Saitoh

17:30 - 18:00 Closing Ceremony and Awards
Scientific information

**Oral Presentations**

All speakers must download their presentations in the speaker’s ready room at least 2 hours before their sessions, unless they have sent them to the scientific secretariat in advance. Presenters cannot use their personal computers for their presentations. We recommend using Microsoft to ensure compatibility. There will be a technician in the room who can help you.

**Speakers’ ready room**

Opening times:  
Thursday 13 October, 07:30 - 18:00  
Friday 14 October, 07:30 - 18:00  
Saturday 15 October, 08:00 - 16:30

ESSD films the invited lectures and uses the videos as educational material available to ESSD members through the website (password controlled). All invited speakers have been asked for signed permission for us to use their lectures in this way.

**Free paper presentations**

Free paper presenters must be one of the authors of the study, which must be original. Abstracts are published in Dysphagia Journal following the congress and are put on the ESSD website. Presenters must have permission to show all their images and data, it is common practice for other delegates to photograph and record interesting presentations.

**Poster Sessions**

All posters will be displayed all day Friday and Saturday. Posters must be mounted before the morning coffee break on Friday and removed after the afternoon coffee break on Saturday. Posters that are not removed will be discarded.

Delegates using the poster service Postersessiononline will pick up their poster at the registration.

Poster presenters must send a pdf of their poster either to Postersessiononline or to the scientific secretariat executiveofficer@myessd.org. A 2-3 minute audio file describing the poster can also be sent (optional), these files will be available through a QR code beside the poster and after on the ESSD website members’ section.

Poster presenting authors are asked to be beside their poster during the poster session assigned them to answer any questions the chairs or other delegates may have. Poster presenting authors must be one of the authors of the study, which must be original. Abstracts are published in Dysphagia Journal following the congress and are put on the ESSD website as well as the pdf of the poster. Presenters must have permission to show all their images and data, it is common practice for other delegates to photograph and record interesting presentations.

**Abstract Book**

Abstracts presented in the congress are available at the back of the programme and are listed in order of presentation. There is an author index at the end.
Congress information

Accreditation

A certificate of attendance can be picked up from the registration desk at the end of the congress. This year ESSD has applied for CME credits from EACCME of the U.E.M.S. European board of accreditation and the ECM – Educazione continua in medicina, Italian board of accreditation. Delegates who wish to be accredited must sign in and out of sessions as we have the obligation to verify attendance.

Language

The official language of the congress is English. Simultaneous translation is available into Italian (but not Italian into English). Headphones can be picked up at reception and must be returned at the end of the day. Please put the volume at the minimum you can comfortably hear so as not to disturb the surrounding delegates.

Congress App

This year we have contracted an app and all updates will be posted on it as well as any last-minute changes to the programme. If you have any difficulties please ask the assistants or the Speakers Ready room. Details about the app are also available on the congress website www.essd2016.org.

Registration

On-site registration is available but places are limited and material cannot be guaranteed. Delegate registration includes:
• Access to all congress sessions and commercial exhibition
• Delegate bag including all congress materials and a name badge (if available)
• Lunches and coffee breaks
• Welcome reception on Thursday 13 October at 17:30h at the University of Milan Exhibition Hall. Registration to the congress will be possible from 17h on Thursday.

Registration and secretariat desk will be open:

Thursday 13 October, 07:30 - 19:00
Friday 14 October, 07:30 - 19:00
Saturday 15 October, 08:00 - 18:00
General information

CONGRESS VENUE

Università degli Studi di Milano “La Statale”  
Via Festa del Perdono 7  
20122 Milan, Italy

TRANSPORT

How to reach Milan University

From the airports

Milan has three airports: Milano Linate (LIN, 7Km), Milano Malpensa (MXP, 50Km), and Bergamo Orio al Serio (BGY, 50Km). From there, buses will bring you to Stazione Centrale (central railway station, subway yellow line M3).

From the city

- **By train:** the **Central Station** (Piazza Duca d’Aosta) is well served by public transport, it is also the interchange of MM2 and MM3 metro line.
  - **By subway:** red line M1: Duomo station; yellow line M3: Missori station.
  - **By tram:** Line 12, 14 or 15 (stop at via Larga/Verziere), lines 16 or 23 (end station at piazza Fontana) Further information on ATM – Azienda Trasporti Milanesi
  - **By bus:** Line 54 (stop at via Larga o via Baracchini/Paolo da Cannobio); lines 60, 73 or 77 (stop at via Sforza/Andreani); lines 84 or 94 (stop at via Sforza/Ospedale Policlinico).
  - **By taxi:** Arco tel. 02.67 67  
  Autoradio Taxi tel. 02.8585  
  Cooperativa tassisti associati tel. 02.3490809  
  Etaxi tel. 02.5353  
  La Fontana Soc. Coop. A.R.L. Taxi Centro Servizi tel. 02.3492063
  - Radio Taxi Freccia tel. 02 4000
  - Soc. Coop. Arl. tel. 02.85871
  - Taxi Blu tel. 02.4040
  - Yellow Taxi tel. 02.6969
General information

Distances
- 7 km from Milan Central Train station
- 600 mt (7 minutes on foot) from Missori metro station
- 9 km from Linate airport (about 30 minutes)
- 55 km from Malpensa airport (about 55 minutes)
- 60 km from Orio al Serio airport (1 hour)

MILAN
The capital of Lombardy, with its population of 1.3 million people, is the 2nd largest city in Italy and one of the most important European cities. It represents an amazing network that brings together museums, creative and cultural industries, research, education and industrial development.

CLIMATE
Autumn temperatures in Milan are the most pleasant of the year (8-17ºC), but are characterized by highly changeable weather conditions with more frequent precipitation. Humidity is quite high throughout the whole year.

VISA
Italy is a member of the European Community and most visitors can enter without a visa.

ELECTRICITY
In Italy, the voltage is 220v a/c. Plugs are 2 round pins so an adaptor may be necessary.

CURRENCY
The Italian currency is the Euro (EUR / €).

BANKS
Opening times vary, but most banks are open from Monday to Friday from 8:35 to 13.35 and have ATMs in the street or foyer.

CREDIT CARDS
Almost all establishments accept payment by credit card. The main credit cards can also be used to obtain cash from an ATM ("bancomat" in Italy).
General information

SHOPPING
Some of the best addresses for shopping in Milan are Via Montenapoleone, an essential destination for luxury shopping; Corso Venezia, one of Milan’s most exclusive and elegant avenues; Corso di Porta Ticinese, it has been likened to Portobello Road in London; Corso Vittorio Emanuele II, offers many high-street and mid-range brands; Corso Buenos Aires, is reputed to be Europe’s longest shopping street and offers one of the highest concentrations of clothing stores in Europe.

VISITING THE CITY
Milan has always been a rich and important city, with churches, buildings and monuments from various historical periods. The most important church is the Cathedral (“il Duomo”) which is the third largest church in the world; it was built in 1386 and became the symbol of Milan. Santa Maria delle Grazie was built between 1466 and 1490 and modified by Bramante. In the Refectory there is one of the most famous paintings of Leonardo da Vinci: the “Last Supper”. Milan has many historic palazzos like the Palazzo Reale. The Sforza Castle is one of the symbols of Milan together with the Madonnina and the Galleria Vittorio Emanuele II.

Social Programme

Welcome reception

The welcome reception will be held in the University of Milan Exhibition Hall at 17:45 on Thursday, 13 October.

Before welcome reception, delegates can register and pick up their bags and badges for the congress, speakers and presenters can download their presentations and put up their posters.

Congress dinner

The dinner is on Friday 14 October at 21:00 in the Da Noi In, Via Vincenzo Forcella, 6, Milano.

Please tell us if you have special dietary requirements.
Industry sponsored symposiums

THURSDAY 13 OCTOBER

13:30-14:00  Symposium 1.
DJO sponsored symposium: “VitalStim therapy, endotracheal intubation, tracheocannula and dysphagia: the possibility to personalize the treatment from acute to chronic patients”.

Marco Andreoli - Case report of VitalStim treatment in a tracheocannula and PEG tube dependent patient with chronic dysphagia.

Didier Bleeckx and Victoria Mariscal Diaz - Ongoing VitalStim research project in intubated patients.

FRIDAY 14 OCTOBER

13:30 – 14:30  Symposium 2.
Fresenius Kabi sponsored symposium: “Excellence in Dysphagia Management”.
Chair: Prof. Guntram Ickenstein, Germany

13:30-13:40  Introduction
Prof. Guntram Ickenstein, Germany

13:40-14:00  Investigating Safe Swallowing in OD Patients Using Thickeners
Prof. Pere Clavé, Spain

14.00-14:20  Strategies for Optimising Oral Intake
Dr. Julie Regan, Ireland

14:20-14:30  Q & A Session and Concluding Remarks
Prof. Guntram Ickenstein, Germany
Industry sponsored symposiums

18:00-19:00  Symposium 3.  
Nestlé Nutrition Institute sponsored symposium: "Effective care for older patients with swallowing difficulties: Assuring adequate, safe, and appealing nutrition".  
Chair: Marcello Maggio

  Restorative care needs for malnutrition, sarcopenic dysphagia, and frailty  
  Kala Kaspar, PhD  
  Nestlé Health Science, Global Medical Affairs, Switzerland

  Practicalities of managing risk for complications  
  Marcello Maggio MD, PhD  
  Geriatric Rehabilitation Department, University Hospital of Parma, Italy

SATURDAY 15 OCTOBER

Nutricia sponsored symposium: "Managing the dysphagia patient in different care settings".

  Prof Guntram Ickenstein, Germany - Neurogenic dysphagia management in a stroke unit setting

  Dr Justin Roe, United Kingdom - Working in partnership to improve swallowing outcomes in head and neck cancer

  Jenni Flynn, Ireland - Dementia: practical considerations for managing dysphagia
VitalStim® Plus
Electrotherapy and sEMG Biofeedback System

We invite you to have a personal demo at the DJO Global booth #11, and to discover more about the role of VitalStim therapy in patients with endotracheal intubation or tracheocannula during the lunch symposium, Thursday 13th October, 13:30-14:00.
**GOLD SPONSORS**

**Fresenius Kabi** is a global healthcare company that specializes in lifesaving medicines and technologies for infusion, transfusion and clinical nutrition. The company’s products and services are used to help care for critically and chronically ill patients. Fresenius Kabi’s product portfolio comprises a comprehensive range of I.V. generic drugs, infusion therapies and clinical nutrition products as well as the medical devices for administering these products. Within transfusion technologies, Fresenius Kabi offers products for collection and processing of blood components and for therapeutic treatment of patient blood by apheresis systems. With its corporate philosophy of ‘caring for life’, the company is committed to putting essential medicines and technologies in the hands of people who help patients and finding the best answers to the challenges they face.

**Nestlé Health Science** makes a positive difference to the nutritional health, well-being and quality of life of people through innovative, medically recognised nutritional solutions. Our solutions help optimise the nutritional intake of people who aim to combat disease, recover or stay healthy. Our range addresses various nutritional needs and related services including patient and healthcare professional education and training. Innovations are developed with Nestlé Institute of Health Sciences and the Nestlé R&D network. The Institute enables a deeper understanding of interactions between chronic disease, lifestyle and nutrition, which enables Nestlé Health Science to develop new products.

**Nutricia** Advanced Medical Nutrition is a specialised business of Danone, focused on pioneering nutritional discoveries that help people live healthier and longer lives. Nutricia aims to establish medical nutrition as an integral part of healthcare, expanding Danone’s mission to bring health through food to as many people as possible. Nutricia’s extensive range of evidence-based nutrition products and services offer proven benefits and better patient outcomes. The company works with doctors and healthcare professionals in 40 countries to deliver better care and to lower the cost of care. Nutricia serves patients in hospitals, care home settings and in the community. The company pioneers nutritional solutions for oncology, critical care, stroke, frailty and memory loss. In paediatric care, Nutricia offers innovative products and services for the management of cow’s milk allergy, genetic metabolic disorders and faltering growth.

**SILVER SPONSORS**

**Chattanooga** is the world’s largest manufacturer of rehabilitation equipment for treating musculoskeletal, neurological and soft tissue disorders. For over six decades, Chattanooga has set a benchmark for leadership, reliability and excellence. Our products contribute to better
treatment outcomes in hospitals, clinics and home settings worldwide. We lead the physiotherapy industry by example and, through continuous innovation, provide real world solutions for clinicians and their patients. Chattanooga’s VitalStim Therapy is being used in rehabilitation hospitals, acute care facilities and freestanding clinics worldwide. In these facilities, it is helping speech-language pathologists (SLPs) retrain a large percentage of the patients to swallow. Successful VitalStim Therapy is getting patients off PEG tubes or thickened liquids and back to the joys of eating. VitalStim Therapy is a specialized form of neuromuscular electrical stimulation (NMES) designed to treat Dysphagia through muscle re-education. Chattanooga is a brand of DJO Global. For additional information on VitalStim, please visit our VitalStim website at http://www.chattgroup.eu/vitalstim

EXHIBITORS

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SCREEN DYSPHAGIA IN PATIENTS WITH STEINERT DISEASE

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Introduction: Dysphagia is highly prevalent in patients with Myotonic dystrophy type 1 (DM1). For the neurologist it could be of clinical practice to have an accurate screening test to detect patients at risk of dysphagia to refer to the deglutologist. The aim of the study is to analyze sensitivity and specificity of the water swallow test (WST) and of the EAT-10 in detecting dysphagia in patients with DM1. Material and Methods: Forty-two patients with DM1 were recruited. Each patient underwent WST, filled in the EAT-10 and underwent fiberoptic endoscopic evaluation of swallowing (FEES) with 5,10,20 ml on the same day. Penetration/aspiration scale (PAS), pooling score (PS), Dysphagia Outcome and Severity Scale (DOSS) were the three selected outcomes to analyze sensitivity and specificity of WST and EAT-10. Values > in at least one trial were considered positive for PAS, > 7 in at least one trial were considered positive for PS; scores > 6 were considered positive for DOSS. Cut-off scores for the EAT-10 was 3. Results: Sensitivity and specificity of the WST were respectively 80% and 47% for the PS, 90% and 9.4% for the DOSS; sensitivity and specificity of the EAT-10 were respectively 80% and 22% for the PS, 62% and 44% for the PS, 87% and 0% for the DOSS. Conclusions: Both water swallow test and EAT-10 are inadequate tools to screen dysphagia in patients with DM1. Specific screening tools for DM1 need to be developed.

EATING ASSESSMENT TOOL-10 PREDICTS ASPIRATION IN ADULTS WITH RESPIRATORY DISEASE

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Introduction: Dysphagia often presents in adults with respiratory disease leading to aspiration pneumonia, dehydration, malnutrition and hospital admissions (Good-Fluter et al.,2000; Clayton, 2014). Prompt detection of those at risk of aspiration can prevent these clinical complications. This study aims to establish the diagnostic accuracy of the Eating Assessment Tool-10 (EAT-10) rating scale in predicting aspiration in adults with respiratory disease. Methodology: A retrospective review of adults with respiratory disease who completed an EAT-10 and underwent FEES on the same day was completed in an acute hospital (January 2014-April 2016). EAT-10 ratings and Penetration-Aspiration Scale (PAS) scores were extracted (6-8 PAS ratings=aspiration). Receiver operating characteristic (ROC) curves were created using MedCalc. Area under the curve (AUC), sensitivity and specificity associated with the optimal cut-off value, positive predictive value (PPV), negative predictive value (NPV), likelihood ratio, and 95% confidence intervals (CIs) were calculated. Results: Twenty-five adults met inclusion criteria (15 males; mean age 64; COPD n=12, recurrent LRTI/pneumonia n=7, respiratory failure n= 3, asthma n=3). Individuals who aspirated had significantly higher EAT-10 scores (mean score 17.90) than those who did not aspirate (mean score 10.53) (U=26.000, p=0.005). The EAT-10 was significant in detecting aspiration (PAS &#8805; 6; AUC=0.827, p=0.001, SE=0.083), with a CI of 0.624 to 0.947. An EAT-10 cut-off value of 12 presented a sensitivity of 0.90 (CI = 55.50 to 99.70), specificity of 0.73 (CI = 44.9 to 92.2), a PPV of 69.2% (CI = 38.6 to 90.9), a NPV of 91.7% (CI = 61.5 to 98.8), and a likelihood ratio of 3.370 (CI = 1.4 to 8.0). Conclusion: The EAT-10 shows good diagnostic accuracy for identification of aspiration in adults with respiratory disease. The EAT-10 may act as a quick and useful screening tool to identify adults who require further dysphagia evaluation.

MEALTIME ASSESSMENT SCALE (MAS): DEVELOPMENT AND VALIDATION OF A SCALE FOR MEAL ASSESSMENT

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Introduction: The study aimed to develop and validate a scale to measure safety and efficiency of meals. Material & Methods: The study included: i) scale development; ii) preliminary psychometric testing; iii) scale revision; iv) validation. The scale, named Mealtime Assessment Scale (MAS), was tested on 100 persons with dysphagia and 100 persons without dysphagia. Normative data were generated for four age groups. Internal consistency, inter-rater reliability, concurrent validity, responsiveness and the ability of the MAS to distinguish between persons with and without dysphagia were investigated. Results: Internal consistency was >alpha=0.790. An inter-rater reliability of r=0.85 and ICC=0.80 were found for the total score, all subscales and all items except for four items. Both total and subscales’ scores showed a mild to moderate correlation with the Mann Assessment of Swallowing Ability (MASA) and the ASHA NOMS swallowing scale. A statistically significant difference between persons with and without dysphagia was found for total and subscales’ scores in all age groups. Improvements in patients’ swallowing performance after modification of diet recommendation were recorded by total and subscales’ scores. Conclusions: The MAS seems to be a valid and reliable scale for the assessment of safety and efficiency of meals.
02.04 INTERNATIONAL STANDARDIZATION OF THE TEST OF MASTICATING AND SWALLOWING SOLIDS IN CHILDREN (TOMASS-C)
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Introduction. Identification, measurement and reporting the specific mastication problems in children are difficult, because clinical observations are mainly limited to qualitative assessments. The Test of Masticating and Swallowing Solids (TOMASS) was developed to quantitatively measure oral-pharyngeal efficiency for solid bolus intake in adults (1). Normative data have been collected for adults between 18 and 100 years in different countries showing both similarities and differences between countries when testing healthy controls (2). The aim of the present study was to collect normative data in children (TOMASS-C) from 4 to 18 years. To this end, researchers from different countries collaborated to collect data. Material & methods. The TOMASS-C involves ingestion of a commercially- and regionally-available cracker with instructions to ‘eat this as quickly as is comfortably possible’. Data were collected from up to 120 children in New Zealand, Germany, Portugal, and the Netherlands. Specifically, data included number of discrete bites, masticatory cycles and swallows, as well as total time taken, per cracker. Results. The test was well tolerated by children from 4 years old. Results of the participating countries (N 125 - 150 per country), divided into 5 age groups (4 - 6; 6 - 8; 8 - 10; 10 - 14; 14 - 18 years), the differences between the countries, and a first comparison with 25 Dutch children with Down syndrome will be presented. First results reveal no differences between the youngest group and the other groups were found (p > .05). Children with Down syndrome required a longer total time, an increased number of masticatory cycles, and bites compared to the control group on the TOMASS-C. Conclusions. The TOMASS-C is an easy and well-tolerated quantitative test to measure the efficiency of chewing in children.

02.05 INTER-RATER RELIABILITY OF THE DYSPHAGIA OUTCOME AND SEVERITY SCALE (DOSS): EFFECTS OF SLT EXPERIENCE, AUDIO-RECORDING AND TRAINING
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Introduction: The Dysphagia Outcome and Severity Scale (DOSS) is a 7-point scale measuring dysphagia severity based on VFSS. This study measured inter-rater reliability (IRR) of the DOSS and the effect of SLTs’ experience, VFSS audio-recording and a short training session on IRR of DOSS ratings. Methods: This research has a quantitative prospective study design. Seventeen SLTs were invited to participate. Seven SLTs from within a postgraduate dysphagia program in a university setting (< 3 years analysing VFSS) and ten SLTs working in a hospital, Dublin, (> 3 years analysing VFSS) were recruited. In each setting, SLTs viewed 8 VFSS clips (5 of which had audio recording) which were projected onto a screen. Participants were asked to rate each VFSS clip on the DOSS scale. On a later date, the less experienced (postgraduate) group attended a 1 hour training session on DOSS rating after which IRR of the DOSS was re-evaluated. The Cohen’s kappa co-efficient established the IRR. Results: Across all participants, the IRR of the DOSS ratings was 0.36 (z=19.9, p < .05), presenting fair agreement. Moreover, IRR of DOSS were significantly higher (k=0.342, z=12.3) within the experienced (hospital) group, compared to the less experienced (postgraduate) group (k=0.298, z=7.05) (p < .05). IRR of the DOSS was significantly better in VFSS clips with audio (k=0.287, z=8.99) compared to clips without audio (k=0.0395, z=0.817, p < .05). The 1 hour training session did not improve the IRR of the DOSS. In fact, IRR before training (k=0.328, z=6.37, p < .05) was significant better comparing to post training (k=0.218, z=4.22, p < .05). Conclusion: IRR of the DOSS presented as fair in this study. This raises concerns as the DOSS is used in clinical practice to capture dysphagia severity and to monitor change. IRR of the DOSS was significantly better with experience and where audio was present during VFSS. The training had a negative outcome in the IRR of the DOSS, although this was short. Further research is required to optimise the reliability of the DOSS.

02.06 CLINICAL ASSESSMENT OF EFFORTFUL SWALLOW PERFORMANCE: INTER-RATER RELIABILITY AND COMPARISON TO SURFACE ELECTROMYOGRAPHY DATA
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Introduction Speech and Language Therapists (SLTs) frequently recommend the effortful swallow (ES) exercise for dysphagia as it increases oropharyngeal pressure, muscle activity and movement. Effective therapy requires feedback to reinforce optimal movements so SLTs often clinically assess how well patients complete the ES to provide feedback on performance. This study examined the accuracy and inter-rater reliability of clinical assessment of ES achievement, which has not previously been studied. Materials & Methods Four specialist SLTs in dysphagia from a UK teaching hospital assessed dysphagic adult in-patients while they completed 3 habitual swallows then 3 ESs. SLTs rated if the ES had been achieved (yes/no) and graded how well it had been completed on a 5-point scale. Ratings were completed in pairs with blinding and concurrent submental surface electromyography (sEMG). Analysis was
made of the agreement between SLTs, the relationship between sEMG and ES ratings and the differences in sEMG amplitude between ES attempts rated “achieved” and “not achieved”. Results Ten consecutive acute adult inpatients with dysphagia, median (IQR) age 66(57-78 yr) participated. 57 paired ratings and 117 individual ratings of ES attempts were analysed. There was no difference in agreement between SLTs on ES achievement (<Kappa>=0.389, p=0.003) and on grading of how well the ES was completed (<Kappa>=0.221, p=0.17). There was no difference in sEMG amplitude between ES attempts rated “achieved” and “not achieved” (p=0.17). There was no relationship between sEMG amplitude and SLTs’ grading of how well the ES was completed (p=0.105). Conclusion This study suggests that clinical assessment of the ES is inaccurate and interrater agreement between SLTs is sufficiently low to raise concern. Feedback provided by clinicians on ES performance may be unhelpful or even misguide therapy. sEMG could provide objective feedback on performance and provide information to enable optimum therapy progression.

02.07 RELATIONSHIPS AMONG NUTRITION STATUS, ORAL FUNCTIONS AND BODY FUNCTIONS IN ADVANCED CANCER PATIENTS

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Introduction/ Malnutrition, oral and body dysfunctions gradually appear in advanced cancer patients as the disease progresses. Relationships between malnutrition and decline in oral functions in community dwelling people have been gradually revealed. We investigated the nutrition status, oral functions and body functions in hospitalized advanced cancer patients. Material & Methods/ Hospitalized cancer patients who visited our dental clinic in the hospital from October, 2015 to January, 2016 were recruited. 89 patients were divided into three groups by the method of procedure: 44 patients for surgery, 25 for chemotherapy and 20 for palliative care. Nutritional status was assessed with Mini Nutrition Assessment-Short Form and Serum albumin (g/dL). Oral and body functions were assessed with tongue pressure and bite force, grip strength, pinch strength and Barthel Index, respectively. Moreover, we divided patients into three groups by tumor locations: 55 patients for digestive organs, 20 for urinary organs and 14 for lung. We examined whether measurement values were differed by three groups using 2 WAY ANOVA. Results/ There were significant differences among three groups divided by the method of procedure. MNA, tongue pressure, grip strength, pinch strength and Barthel Index were significantly lower in patients with palliative care than in those with surgery and chemotherapy (P <0.001). Bite force and serum albumin were lower in patients with palliative care than in those with only surgery (P <0.001). Measurement values were comparable among tumor location groups. Conclusions/ Our results suggest that malnutrition and decline in oral functions appear more frequently in hospitalized advanced cancer patients regardless of primary tumor sites. Furthermore, hospitalized advanced cancer patients developed the symptoms of body dysfunctions. There is also a possibility that side effects of treatment and cachexia may exacerbate body dysfunctions by malnutrition.

02.08 EVALUATING THE RELIABILITY AND VALIDITY OF THE SWALLOWING QUALITY OF LIFE QUESTIONNAIRE USING RASCH ANALYSIS

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Introduction: The Swallowing Quality of Life questionnaire (SWAL-QOL) by McHorney et al. (2002) is a 44-item questionnaire that consists of 11 subscales and is widely used both clinically and in research to evaluate patients’ quality of life related to swallowing difficulties. The SWAL-QOL has been described in literature as a valid and reliable tool. However, the SWAL-QOL was developed and tested using classic-test theory. This study describes the reliability and validity of the SWAL-QOL using item response theory (IRT; Rasch analysis). Methods: SWAL-QOL data were gathered from 4 European countries involving 507 participants (MN age = 63.7 years; SD = 12.8). Most patients (83%) underwent videofluoroscopy and/or FEES to confirm oropharyngeal dysphagia (OD); the remaining 17% received a clinical diagnosis based on meeting selected clinical criteria: 75.7% OD and 24.3% no OD. Data was analysed using Rasch analysis. Results: When analysing all the items combined, the overall item and person reliability of the SWAL-QOL was good, 0.98 and 0.94 respectively. However, the person reliability was poor for 8 of the 11 subscales (0.47-0.73) and the item reliability was poor for the fear subscale. Eight of the subscales exhibited poor person separation and two subscales exhibited item separation. The overall item and person fit statistics were within acceptable range. However, on an individual item fit level, twenty eight items had infit values outside the acceptable range, indicating unpredictable responses for these items and 10 items had large negative outfit values indicating item redundancy. For all the items combined, none of the item categories were category, threshold or step disordered; however, on a subscale level all subscales demonstrated some form of category disordered functioning. Conclusions: The findings suggest an urgent need to further investigate the underlying structure of the SWAL-QOL and its psychometric characteristics using ITR.

02.09 HEALTH-RELATED QUALITY OF LIFE IN DYSPHAGIA

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Introduction: In the literature increased bolus modification has been associated with a decreased health-related quality of life (HR-QoL) in patients with oropharyngeal dysphagia (OD). The severity of OD and underlying aetiology may, however, have been a confounding factor and influenced results. The current systematic review reports on the relationships between HR-QoL and OD including changes following therapy. Methods: A systematic literature search was performed by two independent reviewers in accordance with the PRISMA statement using two different electronic databases PubMed and Embase. All available inclusion dates up to February 2016 were included. Only original
articles reporting on OD and HR-QoL were included. Studies referring to esophageal dysphagia or studies including less than 15 participants were excluded. Results: A total of 26 studies showed sufficient methodological quality and met the inclusion criteria: all studies presented data either on the relationships between HRQoL and OD, or on changes in HRQoL and OD following intervention. Conclusions: Even though the generalization of study results was limited due to the heterogeneity in methodology, terminology and outcome measures, inverse bidirectional associations were found between HRQoL and OD severity: decreased HRQoL was associated with increased OD severity. Additional research on the relationships between HRQoL and OD is needed using study designs with higher levels of evidence, objectifying the severity of OD and underlying diseases, using valid and reliable measures and including unambiguous terminology.

04.01 PRESSURE FLOW ANALYSIS AS A METHOD TO ASSESS ESOPHAGEAL FUNCTION


Introduction: The diagnostic evaluation of esophageal dysphagia remains challenging because of a lack of a clear relationship between symptoms, esophageal contraction patterns, and bolus flow. Recently, pressure flow analysis (PFA), was developed to perform an integrated analysis on simultaneously acquired high-resolution impedance manometry (HRiM) recordings. Previously, our group has shown correlation of PFA metrics with perception of deglutitive symptoms in dysphagia patients and controls. These unprecedented results require further validation in a large patient population. Material & Methods A total of 131 dysphagia patients (57M, 53<plusminus>15 yrs) underwent HRiM using a 26P16Z catheter with liquid, semisolid and solid boluses. Perception of bolus passage was evaluated using a validated 6-point categorical scale. For comparison, 14 healthy volunteers were recruited (8M, 26<plusminus>6 yrs). Results We included 16 patients with achalasia, 27 with EGI outflow obstruction, 2 with distal spasm, 1 with Jackhammer esophagus, 14 with absent contractility, 53 patients with ineffective motility, and 18 patients with normal motility according to Chicago Classification v3.0. All PFA metrics were significantly altered by bolus passage. Compared to controls, patients had a longer TNIPP (3.11 vs 2.76, p<0.0207) and a higher impedance ratio (0.51 vs 0.38, p<0.0001), indicating impaired bolus clearance. In patients, all PFA metrics were significantly different in relation to perception of bolus passage. Conclusions Based on esophageal HRiM recordings of healthy controls and dysphagia patients, this study explored the potential added value of novel PFA metrics. By evaluating a large clinical series of patients with symptoms of esophageal dysphagia, we established that PFA metrics are superior to HRM metrics in distinguishing patients from controls and in displaying abnormalities in correlation with subjective perception of bolus passage at the individual swallow level.

04.02 THE INFLUENCE OF AGE CATEGORY, GENDER, LOCATION, VOLUME, EFFORT AND CONSISTENCY ON PERCENTAGE OF MAXIMAL LINGUAL SWALLOWING PRESSURES (PsP) IN HEALTHY BELGIAN ADULTS

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Introduction: PsP could be a screening tool for weakness-related dysphagia. Similarities and discrepancies with existing literature were found (img2). Age differences between AC1 (5-20 yo; 2: 61-70 yo; 3: 71-80 yo; 4: 80+ yo) were based on previous research on MIP. Bolus and volumes used during testing were typical for a normal meal (water, yoghurt and potato puree; ‘natural quantities’ of 5 and 10 ml, equal to teaspoon and eating spoon volumes). MIP and swallowing pressures were assessed using the IOPI, allowing the calculation of PsP (PsP = PsP wallowing/MIP*100). Anterior and posterior tongue were assessed, and each bolus was swallowed using both non-effortful (NES) and effortful (ES) swallows; visual feedback was not allowed as not to influence NES (and ES). Analysis used Mixed Models ANOVA and post-hoc pairwise comparisons with Bonferroni correction. Results: No differences in PsP were found for gender or volume. Age revealed significant differences between AC1 and AC2-3, also apparent in bolus by age interaction (img1). There was a significant increase in PsP used with increasing bolus viscosity. The posterior tongue in women used higher PsP than NES regardless of AC and location; NES followed the main effect of age. Conclusions: No differences in PsP in healthy adults indicate that PsP remains constant across ages except for NES in AC4, indicating a decreased functional reserve. Several similarities and discrepancies with existing literature were found (img2). PsP could be a screening tool for weakness-related dysphagia.
04.03 INFLUENCE OF PHARYNGEAL PROPELLING FORCES ON PREDICTIVE ABILITY OF INTRABOLUS PRESSURE TO IDENTIFY STRICTURES OF THE PHARYNGO-ESOPHAGEAL JUNCTION

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Introduction: Strictures of the upper oesophageal sphincter (UOS) are an important contributor to dysphagia after chemo-radiotherapy. Due to the multifactorial mechanism of the opening of the UOS, radiography alone is often unreliable. Intrabolus pressure (IBP) acquired with high resolution manometry and impedance (HRMI) may be indicative of a UOS stricture, however generation on IBP is dependent on adequate pharyngeal propulsion. Aim: To determine the effect of pharyngeal propulsive forces on accuracy of intrabolus pressure measurements in identifying UOS strictures. Material & Methods: Pharyngeal swallowing function was assessed with HRMI in 19 dysphagia HNC survivors previously treated with chemo-radiation. Candidate IBP measures (fig.1) and peak pharyngeal pressures (PeakP) were obtained as means from 3x5ml barium swallows. IBP1-3 were measured at the maximum excursion of the UOS at temporal locations determined by maximum admittance at the UOS apogee (IBP2) and 1 cm above (IBP1) and below (IBP3). IBP4 was a mean pressure at the maximum admittance. Integrated relaxation pressure (IRP 0.25s) was determined at the UOS during bolus flow. Presence of a stricture was determined by a mucosal tear after a graded endoscopic dilatation up to 16mm. Predictive values of IBP measures were evaluated by ROC analysis for all patients and subsequently patients with lowest PeakP were progressively removed from the cohort. Results: IBP 1 was the best predictor for strictures with an AUC of 0.83. The AUCs for IBP2-3 & IRP0.25s were 0.69, 0.63, 0.72 & 0.77 respectively. When only patients with PeakP >56mmHg were considered (n=11) IBP1 became a perfect predictor (fig.2). Conclusions: Pharyngeal propulsive force has substantial impact on the accuracy of intrabolus pressure in determining presence of a stricture. When peak pharyngeal pressure is adequate, intrabolus pressure measured at the point of maximum admittance 1cm above the maximal excursion of the UOS is an excellent predictor.

04.04 EFFECT OF AGE, GENDER, VOLUME AND CONSISTENCY ON WHITE-OUT DURATION IN HEALTHY SUBJECTS

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Introduction: White-out is the phase of obscured vision during fiberoptic endoscopic evaluation of swallowing (FEES); it is usually considered an estimate of pharyngeal phase duration and its measurement could be of clinical and research utility. Material & Methods: Twenty-nine subjects (13 M, 16 F) with no history and complaint of dysphagia were recruited. They were divided into 3 age groups: age < 30 years (n = 10), age > 30 < 69 (n = 10) and age > 69 (n = 9). Each subject underwent FEES with 3 trials of 5, 10 and 20 ml of thin liquids and semisolids and 3 trials of solid food, for a total of 21 swallows. 849 swallows were recorded and 798 analyzed. Frame–by–frame analysis was performed for white–out duration analysis. An ENT resident and two SLP experienced in FEES analysis served as raters. Inter-rater and intra-rater reliability of white-out duration was measured. Effects of age, gender, volume and consistency on white-out duration was also measured. Results: White-out duration lasts longer in males than in females, increases after the age of 70 years, is shorter with thin liquids compared to semisolids. Conclusions: White-out duration during FEES can be reliably measured; white-out duration lasts longer in males than in females, increases after the age of 70 years, is shorter with thin liquids compared to semisolids.

04.05 CLINICIAN RATINGS OF RESIDUE ON FEES: YEARS OF EXPERIENCE DOES NOT AFFECT RATINGS

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Introduction: To determine the amount of residue seen on a flexible endoscopic evaluation of swallowing (FEES), studies have relied on using expert opinion due to an absence of a true gold standard measure of residue on FEES<sup>1,2</sup>. Yet no studies have compared expert ratings to clinicians with varying experience with FEES. The present study examined these differences across a range of residue severities using a visual analog scale (VAS). Methods: 10 novice (0-1 year of FEES experience), 19 proficient (2-9 years experience), and 4 expert clinicians (15-31 years experience) watched 26 FEES videos and rated the amount of residue present after the first swallow on a VAS (a line indicating none to severe measuring 100mm long). No training was provided. Cracker and applesauce residue ratings were analyzed using a two-factor ANOVA to assess to assess for any differences between grouping of years experience and residue severity. Results: For the cracker videos, there was no significant difference in the ratings between novice, proficient, and expert raters ($p=0.27$). Similarly, for applesauce videos there was no significant difference in the ratings between novice, proficient, and expert raters ($p=0.18$). There was a significant difference in ratings between residue severities for both cracker ($p=0.001$) and applesauce ($p=0.001$). Conclusion: This study found that expert clinician ratings of pharyngeal residue on FEES did not significantly differ from proficient or novice ratings for any severity of applesauce and cracker boluses. Curiously, this contradicts the hypothesis that years of FEES experience influences residue ratings. Previous reports of clinician ratings have used intraclass correlation coefficient to assess reliability of ratings<sup>1,2,3,4</sup>, but this study used a different method, allowing for the inclusion of multiple factors. We found no significant influence from years experience with FEES, but the variance between video severities was, as expected, significant.

04.06 QUANTIFYING VALLECULAR RESIDUE ON FEES AND MBS VIDEOS

J.M. Pisegna<sup>1</sup>; W.G Pearson<sup>1</sup>; M.B. O’Dea<sup>1</sup>; E. McNally; R. Scheel<sup>1</sup>; S.E. Langmore<sup>1</sup>

<sup>1</sup>Boston University Medical Center; <sup>2</sup>Georgia Regents University.

Introduction: Pharyngeal residue is of high significance: it increases the risk of aspiration<sup>1</sup>, lowers quality of life<sup>2</sup>, and results in weight loss/malnutrition<sup>3</sup>. Recent efforts have been made to quantify residue on modified barium swallow studies (MBS)<sup>4</sup> but no methodology exists to quantify residue seen on a flexible endoscopic evaluation of swallowing (FEES). In this pilot study, we specifically investigated residue in the valleculae using simultaneous studies: MBS and FEES done concurrently. They provide a unique opportunity to compare quantitative methods, knowing that what is visualized in each video represents the same exact residue. Methods: 8 simultaneous studies (FEES and MBS) were used for computerized analyses. Patients received a measured bolus of 5-15mL applesauce containing green food dye and 40% barium powder. For each MBS video, for each of the 3 best frames representing the vallecular residue after the swallow of applesauce, a trained rater calculated the data for the Normalized Residue Ratio Scale of the valleculae (NRRSv)<sup>3</sup>. Recent efforts have been made to quantify residue on FEES<sup>4</sup> but no methodology to quantify residue seen on a flexible endoscopic evaluation of swallowing (FEES). In this pilot study, we specifically investigated residue in the valleculae using simultaneous studies: MBS and FEES done concurrently. They provide a unique opportunity to compare quantitative methods, knowing that what is visualized in each video represents the same exact residue. Methods: 8 simultaneous studies (FEES and MBS) were used for computerized analyses. Patients received a measured bolus of 5-15mL applesauce containing green food dye and 40% barium powder. For each MBS video, for each of the 3 best frames representing the vallecular residue after the swallow of applesauce, a trained rater calculated the data for the Normalized Residue Ratio Scale of the valleculae (NRRSv)<sup>3</sup>. The NRRSv for MBS videos had a strong association with the %filled measures from FEES videos ($r=0.74$, $p<0.01$) (Fig.2). The NRRSv ranged from 0.03-0.63 and the %filled ranged from 19.0-80.9. Conclusion: Methodology to quantify residue on FEES is sorely needed. This pilot study provides support for a preliminary method to quantify residue on FEES. We found a strong relationship between the established methods for MBS studies (NRRSv) and a new quantitative method for FEES.<sup>2</sup>

15:00 – 16:00  Free papers 3: Dysphagia after HNC treatment

07.01 SYNK: SWALLOWING EXERCISES AND RESISTANCE TRAINING FOR HEAD AND NECK CANCER PATIENTS DURING RADIOTHERAPY. A STATUS

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Introduction: Traditionally, rehabilitation is initiated when loss of function is already established. Emerging evidence suggests that it is of benefit to patients to initiate an early rehabilitation process before and during treatment. Head and neck cancer (HNC) patients have a unique set of challenges to the functional level such as pre- and post-treatment dysphagia, pain, weight loss, and often high baseline levels of alcohol and tobacco consumption. The aim of SYNK is to explore the ef-
fects of swallowing exercises and progressive resistance training (PRT) during radiotherapy (RT) in patients with cancer in larynx, oro- or hypopharynx or oral cavity. Methods: SYNK is a randomized controlled trial with a control group that receives standard care and an intervention group that receives twice-weekly PRT and three times weekly swallowing exercises by physio- and occupational therapists respectively, as well as daily home exercises throughout RT. Outcomes are measured at end-of-treatment and 2, 5 and 12 months after. Results: In 1 year 254 HNC-patients were screened for eligibility of which 57% (n=144) were found ineligible according to inclusion criteria. Of 110 eligible patients 93 (85%) were approached of which 56 (60%) were enrolled. All patients who refused did so because they found the intervention too much to overcome (83%) or due to disappointment to be in control group (17%). Those who have completed the intervention express great appreciation towards the physical, psychological and social benefits of the exercise program. SYNK was recently expanded and is now a multi-center trial. Conclusion: Preliminary results show that SYNK is feasible with the majority of eligible patients enrolling and only few dropouts. According to participant statements it is a beneficial and highly rewarding exercise program.

07.02 PREDICTIVE FACTORS FOR POSTTREATMENT SWALLOWING DYSFUNCTION AFTER RADIO(HEMO)THERAPY FOR HEAD AND NECK CANCER

A. Goeleven1, D. Nevens2, F. Dupret3, W. De Neve4, E. Dejaeger1, B. Braeken5, E. Declerck1; M. De Smet6, L. Luttets6, S. Nuyts7, V. Vander Poorten1 / 1University Hospitals Leuven; 2University Hospitals Ghent; 3Catholic University Leuven Introduction. Radiotherapy (RT) is currently the treatment of choice for locally advanced head and neck squamous cell carcinoma (HNSCC). However, the high incidence of late posttreatment dysphagia severely impairs the quality of life in this patient population (1)(2). Predicting which patients are at risk for developing severe late dysphagia can help to select patients who might benefit from prophylactic swallowing exercises (3)(4). Therefore we correlated tumor site, radiation dose to the elective neck (40Gy vs 50Gy), neck dissection before RT, PEG-tube and Total Dysphagia Risk Score (TDRS) with objective and subjective swallowing dysfunction 6 and 12 months after (chemo)RT in head and neck cancer patients. Materials and methods. The patient population consisted of 63 patients who were treated with RT with or without concomitant CT for a locally advanced HNSCC. Clinical data were collected prospectively at 3 time points (baseline, 6 months and 12 months post treatment) and consisted of objective data (videofluoroscopy, Penetration/Aspiration scale (PAS), Swallowing Performance Status Scale (SPSS)), clinician reported (CTC v.2, RT06/EORTC) and patient reported data (EORTC H&N35). The videofluoroscopic studies were evaluated by 2 different, blinded, experts and a consensus between these observers was made. Conclusion. The results showed an association between tumor site and PAS, SPSS and patient reported dysphagia. No differences were found for patients receiving additional CT. A reduction of radiation dose on the elective nodal sites (40gy vs 50gy) did not result in a decrease of swallowing difficulties. Neck dissection had a negative impact on swallowing outcomes and PEG-usage correlated not result in a decrease of swallowing difficulties. Neck dissection had a negative impact on swallowing outcomes and PEG-usage correlated with both objective and patient reported swallowing dysfunction. TORS predicted the objectively evaluated dysphagia (SPSS), 6 months after treatment, but only for patients who got an intermediate or high risk score according to the model.

07.03 FUNCTIONAL OUTCOMES AND QUALITY OF LIFE AFTER TRANSORAL ROBOTIC SURGERY IN PATIENTS WITH OROPHARYNX AND SUPRAGLOTTIC CANCER

D. Geurevickx1, A. Goeleven1, J. Moulemanx1, V. Vander Poorten1 / 1UZ Leuven. Objective: To evaluate the quality of life (QOL) in relation to swallowing function according to a multifaceted model in patients with head and neck cancer (HNC) treated with Transoral Robotic Surgery (TORS). Design: Clinical single-center study. Material & Methods: In 11 patients who underwent TORS the swallowing function was assessed both subjectively - and objectively, considering the multidimensional conceptual framework of the ICF model. Functional outcome was determined through Fiberoptic Endoscopic Evaluation of Swallowing (FEES), the MD Anderson Dysphagia Inventory (MDADI), the Dutch version of the Swallowing Quality of Life Questionnaire (DSWAL-QOL), the EORTC-H&N35 and the Functional Oral Intake Scale (FOIS). Demographic, oncologic and clinical follow up data were collected. Results: Mean scores obtained for MDADI, DSWAL-QOL and EORTC are 82.36 (SD 9.92), 84.91 (SD 9.81) and 11.00 (SD 6.55). Median FOIS score was 7.00 and all patients were able to resume oral intake after 2.09 days on average (SD 1.76). Significant correlation was found between EORTC and MDADI (r = -.72, p=0.01) on the one hand and DSWAL-QOL (r = -.82, p=0.01) on the other hand. No significant correlation was found between objective FEES ratings and patient reported swallowing outcomes. Although patients achieved similar results in terms of objective assessment, patient reported outcome scores exhibit more variation. Conclusion: Patients included in this study achieved good functional outcome results in terms of swallowing and patient reported quality of life. A multifaceted approach seems to be valuable to document and describe functional outcome in terms of swallowing function. Key-Words: Transoral robot surgery (TORS), head and neck cancer (HNC), quality of life (QOL), functional outcome, swallowing.

07.04 LONG TERM RESULTS OF SUPRAGLOTTIC LARYNGOPLASTY IN TREATMENT OF CHRONIC ASPIRATION IN IRRADIATED NASOPHARYNGEO-GEAL CARCINOMA PATIENTS

P. Ka1, A. Vaniotis1, V. Abdullah1, M. Tong1 / 1United Christian Hospital; 2Prince of Wales Hospital. Introduction. Dysphagia is one of the long-term complications of radiotherapy treating nasopharyngeal carcinoma (NPC). Despite swallow-
Free Water Protocols address some of the issues that arise as a result of thin-liquid restrictions, aiming to improve patient compliance and quality of life. There are no high quality systematic reviews of the evidence on FWPs, and no consensus on their safety. The aim of this study is to evaluate the effectiveness and safety of FWPs for adults with dysphagia in order to inform practice. Material & Methods: A systematic review of all published and unpublished randomized controlled trials and controlled clinical trials was carried out. Outcomes specified were aspiration pneumonia, total fluid intake, quality of life and adverse events. A comprehensive search of seven electronic databases was completed up to April 2016. Ongoing clinical trials were searched on trial websites and peer-reviewed journals and conferences proceedings were hand-searched. No language restrictions were applied. Data was extracted by four independent reviewers and the quality of the studies was analysed by rating the risk of bias using the Cochrane Review Manager software. Results: Six studies were eligible for inclusion in the review. Significant heterogeneity was noted among studies in implementation of FWPs, outcome measures used, and methodological quality. No definitive conclusions could be reported on the effectiveness of FWPs among adults with dysphagia with regard to the outcomes specified. The overall quality and heterogeneity of included studies does not permit a firm recommendation for clinical practice. Conclusions: Further high-quality research is warranted to support the use of FWPs in clinical practice. This study provides direction for optimal implementation of FWPs and a protocol for future clinical trials. Meanwhile caution should be exercised regarding the use of FWPs.
Introduction: Non-invasive brain stimulation such as repetitive Transcranial Magnetic Stimulation (rTMS) can modulate excitability in the human swallowing motor cortex. We have previously shown that the induced excitability is individually variable. However, the molecular mechanisms controlling this excitability remain unknown. Swallowing neurophysiology and impairments might be in part driven by genes. The aim of this study was to determine whether the variability in excitability after 1Hz and 5Hz rTMS within the pharyngeal motor cortex might be affected by a number of selected single nucleotide polymorphisms (SNPs). Materials and methods: 11 SNPs from 7 genes (BDNF, COMT, TRKB, APoE, DRD2, GRIN2B and GRIN1) were selected to explore possible link between neurophysiological outcomes after rTMS intervention with high (5Hz) and low (1Hz) frequencies. 41 healthy young (mean age 25.4 ± 4.6 years) volunteers were investigated. All subjects were assessed for corticobulbar excitability after single-pulse TMS. Repeated measurements of motor evoked potentials (MEPs) from the pharynx were recorded before and for up to one hour after the interventions of 1Hz and 5Hz rTMS. Salivary DNA was collected and SNPs correlated with pharyngeal MEPs and interventions (1Hz vs. 5Hz rTMS). Results: Non-carriers of the minor G allele from SNP rs6269 from COMT gene were more likely to be non-responders after delivering 1Hz and 5Hz rTMS, while those carrying the G allele were more likely have inhibitory and excitatory outcomes (P-value = 0.026). Cross-tabulation analysis with chi square indicated there was a significant difference in responsiveness to 5Hz rTMS with one SNP - DRD2 rs1800497, and specifically carriers of minor allele A, being more strongly inhibited (P-value = 0.03) than non-carriers. Conclusion: We report possible evidence for genetic associations of COMT and DRD2 with the neuromuscular control of swallowing. By rTMS paradigms. However further research is needed.

11.02 SWALLOWING FROZEN AND MIXED BOLUS CONSISTENCIES: KINEMATICS IN YOUNG AND OLDER HEALTHY ADULTS
K.J. Sunday1; A.K. Vose1; L. Greene1; E. Karagiorgos1; L.A. Humbert1 1University of Florida, 2Johns Hopkins Hospital
Introduction: It is common for clinicians to make nil per os (NPO) recommendations for individuals with swallowing impairments, but still allow these patients to eat ice chips to prevent disuse atrophy and maintain oral moisture. It is assumed that swallowing frozen foods is similar to eating a mixed consistency bolus, because melting occurs in the oral cavity. However, swallowing physiology and bolus flow of frozen and mixed consistencies is understudied. Materials & Methods: In this study, we investigated the impact of bolus consistency on swallowing kinematics in 41 healthy adults (n = 20, 20-40 yrs; n = 21, 60+yrs). Subjects completed 25 total swallows of 5 different bolus consistencies under videofluoroscopy: 10ml thin liquid barium, barium ice chips, room-temperature barium pudding, frozen barium pudding, and a mixed consistency (teaspoon of thin liquid barium with mini chocolate chips). The following swallowing kinematics were analyzed: swallow reaction time (SRT), laryngeal vestibule closure reaction time (LVCrt), UES opening reaction time (UESOrt), and pharyngeal transit time (PTT). Results: SRT, LVCrt, UESOrt, and PTT were all significantly shorter in thin liquid boluses compared to other consistencies (p = <0.001). When comparing frozen pudding and mixed consistency boluses among the young and older participants, SRT, LVCrt, UESOrt, and PTT were significantly longer in older adults (p = <0.001). Conclusion: Longer durations with all boluses except thin liquids could be due to pharyngeal packing, which occurs when the tongue intermittently propels masticated food to the valleculae, where a bolus accumulates prior to swallowing (Matsumo & Palmer, 2015). Pharyngeal packing was present when swallowing barium ice chips, pudding, frozen pudding, and the mixed consistency boluses and occurred more frequently in older adults.

11.03 PROGRESSIVE PHYSIOLOGIC FUNCTIONAL ALTERATIONS IN SWALLOWING IN CORRELATION TO AGE
A.C. Wutige-Hannig1; C.E.M. Hannig1 / Praxis Dres. Wutige-Hannig
Introduction. From young adult age to the senium there is a progressive alteration in swallowing performance. The study will illustrate the aging results according to different sensorial and functional annotations. Material and Methods: In our radiographically studied cohort of over 30.000 patients we analyzed the timing of oropharyngeal / esophageal movements and the correspoxent anatomical disorders. The studies were mainly performed by DSI or digital Fluoroscopy with a registration frequency of 30-50 images/s. Liquid, semisolid and solid bolus were applied. Single image analysis and frame counting was executed. In a retrospective analysis patients with influencing pathologic alterations were excluded. From our patient group 5682/ 30254 could be included in this study. Results: In timing the reduction of the trigger
of swallowing onset, the progressive prolonging of the propagation of the
dorsal pharyngeal wave, the delay of layngeal closure and other
events are important landmarks. The relative tonicity of the oropharyngeal
structures, the movement of the epiglottis and the relative hypo-/ hyperplasticity of the OES shows a remarkable alteration with lifetime.
The duration and the continuity of the esophageal wave has also an
important relation to age. Statistical relevant alterations can be dem-
onstrated at the measurements of 20 YY, to 40-50 YY an to the older (over 75 YY). Patient examples in relation to age and timing analysis will be
shown. Conclusion: In our daily patient studies we need to integrate
the physiologic alterations of the swallowing performance in order to
appreciate the individual disturbance of our patient. This allows us not
to overestimate the grade of the objective patient’s illness.

11.04 CORTICAL MECHANISMS FOR THE INTEGRATION OF POSTURE
AND SWALLOWING MOVEMENT: A FNIRS STUDY
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of Medicine; 2Chuo University.
(Backgrounds) The swallowing performance is influenced by posture.
There are subcortical and cortical centers above the brainstem that in-
duced swallowing movement, however, their specific role and connec-
tions are not well understood from the viewpoint of postural change. We
applied functional near-infrared spectroscopy (fNIRS), an optical meth-
Od that noninvasively measure cortical hemodynamics, for brain map-
ing in swallowing with postural change. Since fNIRS measurements are limited to the cortical
surface, determining cortical connections to insula and basal ganglia in
swallowing requires continued research.

11.05 THE IMPACT OF VARIOUS CONSISTENCIES ON SWALLOWING
SAFETY IN NEUROGENIC DYSPHAGIA
Ledl Christian1; M. Merli-Roetzer1; 1Schoen Klinik Bad Aibling
Introduction: Dietary adaptation is an important intervention to avoid
aspiration and exploits different characteristics of food. It is well
known that thickening of fluids can reduce the risk of aspiration. The
aim of this study is to determine the impact of fluid and texture vari-
ation on swallowing safety in neurogenic dysphagia. Method: Analysis
of 958 FEES exams which were conducted during a 2-year period in a
neurological acute and rehabilitative hospital. Penetration-Aspiration
scores (PAS) were determined in a consensus procedure by 2 raters with
repeated rater trainings. FEES exams were included in the analysis if
multiple consistencies (saliva, fluids, jelly and solids) could be tested
(n=724). Results: PA values differed significantly between consistencies
(Friedman test; p=0.000) with jelly being the safest consistency
(mean PAS=2.5) followed by solids (mean PAS=3.0). The highest risk of
aspiration was associated with fluids (mean PAS=5.3) and saliva (mean
PAS=4.5). Thickening of fluids reduced the mean PAS to 3.9. This order
was maintained in patients who aspirated (PAS >=6) at least on one
consistency (n=424; mean PAS: fluids 6.8; saliva 6.1; thickened fluids
4.5; solids 3.8; puree 3.5) as well as in patients who aspirated saliva si-
lently (n=104; mean PAS: fluids 7.1, thickened fluids 4.1, solids 3.8, jelly
3.1). Conclusions: Jelly proved to be the safest consistency for patients
with neurogenic dysphagia. Solids are nearly as safe and should be of-
ferred to patients with intact reflexive cough. A significantly higher risk
of aspiration is associated with drinking and saliva. As to be expected,
thickening of fluids improved swallowing safety but still was not as
save as offering puree or solids. Patients who aspirate saliva should
not be deoralized without further examination because many of them
will be able to swallow other consistencies safely. The high incidence
of aspiration of saliva underlines the need for pulmonary rehabilitation.

11.06 THE PREVALENCE OF PHARYNGEAL SWALLOWING DISORDERS IN
PATIENTS WITH DEMYELINATING DISEASES
M. Milewska1; K. Grabarczyk1; T. Czernicki2; D. Dziewulska2; M. Panczyk2; B. Jamróz1; J.
Chmielewska1; 1Department of Human Nutrition, Medical University of Warsaw;
2Department of Neurosurgery, Medical University of Warsaw; 3Division of Teaching and Outcomes of Education, Medi-
cal University of Warsaw; 4Department of Otolaryngology, Medical University of Warsaw
Introduction. Dysphagia in demyelinating diseases usually receives
limited attention. It is commonly known that swallowing disorders
can lead to aspiration pneumonia, dehydration and malnutrition. Mate-
rial and Methods. In total, 72 consecutive patients (64 with multiple
sclerosis (MS) and 8 with Devic’s Syndrome) admitted to a Neurological
Unit of Public Central Teaching Hospital Medical University of Warsaw.
Participants receiving enteral or parenteral nutrition were excluded.
The assessment of swallowing disorders was taken by the Dysphagia
Multiple Sclerosis (DYMUS) and Eating Assessment Tool 10 (EAT-10) questionnaire. Dysphagia was defined as having "Greater or equal" 3 points in both scales. The results were analyzed using SPSS version 17.0. Results. Among 72 patients, 34.7% were classified as having dysphagia (35.9% of MS patients and 50% of Devic’s Syndrome). The mean age was 44.2 ± 10.6 years and mean duration of disease - 9.9 ± 7.4 years. Analysis of regression did not show correlation neither between duration of disease nor age and dysphagia. Swallowing disorders were more prevalent in women than in man (respectively 38.3% vs.28%, NS). The necessity of multiple swallows of solid food (80%), pills and solid foods swallowing difficulties (72%) and coughing during swallowing liquids (68%) were the most common observed problems. Increased efforts during swallowing coexisted with cough (p<less or equal>;0.001). Dysphagic patients had a significantly increased length of meals then patients without dysphagia (p<less or equal>;0.001), risk of malnutrition and aspiration pneumonia was detected in 22.2%, however the differences between mentioned groups were not statistically significant. Conclusion. Swallowing problems were relatively common in patients with demyelinating diseases and occurred independently of duration of disease. These results emphasize the importance of screening dysphagia assessment in patients with demyelinating diseases.

11.07 RANDOMIZED CONTROLLED TRIAL OF TDCS FOR THE TREATMENT OF POSTSTROKE DYSPHAGIA
S. Suntrup-Krüger1; C. Ringmaier1; P. Muhle2; T. Warnecke1; R. Dziewas1 /1Department of Neurology, University Hospital Münster

Introduction: Transcranial direct current stimulation (tDCS) is a non-invasive brain stimulation tool that has shown some potential to aid motor rehabilitation following stroke. In the present study we evaluated whether tDCS is able to speed up the recovery of swallowing function in acute dysphagic stroke patients. Material and Methods: In this single-center, double-blind, randomized study, 60 acute dysphagic stroke patients received anodal tDCS (20 min, 1 mA) or sham stimulation over the contralesional swallowing motor cortex on four consecutive days. If the patient’s condition allowed swallow exercises were performed during stimulation. Swallowing function was assessed before and after the study intervention using the Fiberoptic Endoscopic Dysphagia Severity Scale (FEDSS), the dysphagia limit swallow test and two clinical scores such as the Dysphagia Severity Rating Scale (DSR) and the Functional Oral Intake Scale (FOIS). Results: 59 patients completed the study. One patient suffered from recurrent stroke and was therefore excluded. Study groups did not differ according to age, gender, NIH-SS, site of stroke, stroke etiology, acute stroke treatment or presence of other stroke symptoms. Time from admission to study treatment was 116 h in mean in both groups. Baseline FEDSS, FOIS, DSR and dysphagia limit were comparable. Following stimulation, patients from the treatment group showed significantly greater improvement in FEDSS (1.3 vs 0.4 points, p < 0.01), FOIS (1.8 vs 1.0 points, p < 0.05) DSR (4.0 vs 1.5 points, p < 0.01) and dysphagia limit (5.0 vs 1.9 ml, p < 0.05) compared to the sham group. When looking for indicators of treatment success in the stimulation group only, there was a trend towards a greater improvement of DSR with early treatment initiation (p < 0.1). Conclusions: According to our data application of tDCS over the contralesional swallowing motor cortex seems to support the recovery of acute poststroke dysphagia. Early treatment may be beneficial.

11.08 A SYSTEMATIC REVIEW OF THE EVIDENCE UNDERPINNING THICKENED LIQUID RECOMMENDATIONS IN STROKE CLINICAL PRACTICE GUIDELINES
McCurtin5; M. Kavanagh1; C. Roche1; A. Clifford1; F. Murphy1; J. Ryan1; C. Walsh5 /1University of Limerick

Introduction: Stroke clinical practice guidelines (CPGs) contain recommendations for the management of dysphagia, including recommendations for thickening liquids (TL), one of the most common compensatory strategies recommended by SLTs for the management of aspiration. While there is a well-documented variability in quality among CPGs used to guide clinical decision making, high quality CPGs can improve clinical decisions and health-related patient outcomes. Method: This study aimed to search for and perform a quality analysis of stroke CPGs and evaluate the evidence underpinning TL recommendations. A systematic search was performed to retrieve stroke CPGs published between January 2010 - February 2016. A quality appraisal was performed using the AGREE-II, which assessed six domains of CPG development. Recommendations relating to thickening liquids were extracted and the quality of evidence underpinning these was evaluated using the OCEBM framework. Results: Nine CPGs were included in the review. Two CPGs scored above 50% on all six AGREE-II domains, deeming them high quality. Scores were highest for the domain Scope and Purpose (>77% for eight CPGs) and lowest for Applicability (<42% for six CPGs). The majority of CPGs recommended thickeners as a suitable form of management and eighteen recommendations specific to TL were extracted and grouped into six categories. Most recommendations were underpinned by level 5 or inappropriate evidence. Seven recommendations were underpinned by level 1 evidence. Conclusions: The methodological quality of stroke CPG development has improved in comparison to previous systematic reviews. Contradictions exist between the quality of CPGs and the evidence underpinning TL recommendations. Conclusions of recent SRs were not found to be reflected in the content. The poor transparency of evidence prevents clinicians accessing the evidence to determine its applicability and appropriateness, ultimately affecting patient health outcomes.

11.09 EFFECT OF BUSPIRONE IN PATIENTS WITH INEFFECTIVE ESOPHAGEAL MOTILITY
C. Scheerens1; T. Juck; T. Vuytselaar5; E. De Langhe3; T. Omari4; N. Rommel5 /1TARGID - ExpORL - Deglutology, KU Leuven; 2TARGID, KU Leuven & Department of Gastroenterology, UZ Leuven; 3Department of Rheumatology, UZ Leuven; 4Department of Neurology, KU Leuven; 5Department of Neurology, UZ Leuven
Introduction

Ineffective esophageal motility (IEM) is the most frequently encountered esophageal motility disorder, with limited treatment options. IEM is often of unknown etiology, but can also occur in systemic conditions (SC) with esophageal involvement, such as scleroderma or related connective tissue disorders. Previous studies have suggested that buspirone, a 5-HT1A receptor agonist, enhances esophageal peristalsis and lower esophageal sphincter function in healthy volunteers and SC patients. Our aim was to evaluate the effect of acute intake of oral buspirone on esophageal motility, bolus transit and symptoms of dysphagia in patients with IEM, either idiopathic IEM or SC patients with IEM.

Material & Methods

Eighteen patients (6M, 59±16 years) fulfilling the Chicago Classification 3.0 criteria for IEM participated in this open-label, non-randomized single dose study. Combined esophageal HRiM investigation using a 36P16Z-catheter with 3 bolus consistencies (liquid, semisolid and solid) was performed before and 20 minutes after oral intake of buspirone 2x10 mg. Perception of bolus passage was evaluated with each swallow using a validated 6-point categorical scale. Esophageal contractile function was evaluated using the distal contractile integral (DCI), assessing distal esophageal contractile vigor. Pressure-flow analysis was utilized to perform an integrated analysis on simultaneously acquired esophageal manometry and impedance recordings. Variables were compared using paired t-tests (parametric) or Wilcoxon signed rank test (non-parametric). A p-value <0.05 was considered significant.

Results

Nine-hundred swallows of twelve patients with idiopathic IEM and six patients with SC-IEM were analyzed. Overall consistencies, the DCI increased significantly after intake of buspirone from 208 [102-536] to 327 [40-729] mmHg.cm.s (p=0.03). This increase was driven by the idiopathic IEM-group (idiopathic IEM: DCI 388±198 vs 470±118 mmHg.cm.s, p=0.03; SC-IEM: DCI 265±317 vs 323±167 mmHg.cm.s, p=0.22). The TNIPP, a measure of bolus movement in relation to esophageal compression, decreased after buspirone intake from 3.71±0.61 to 3.47±0.61 s (p=0.04), again driven by the idiopathic IEM group (idiopathic IEM group 3.69±0.74 vs 3.39±0.64 s, p=0.08). The number of normal perceived swallows increased after buspirone intake (52% normal perception before intake of buspirone versus 60% normal perception after, χ²(1) = 9.04). Conclusions: Buspirone increases the amplitude of esophageal contractions and decreases dysphagia symptoms in patients with (idiopathic) IEM.

Conclusions

Buspirone increases the amplitude of esophageal contractions and decreases dysphagia symptoms in patients with (idiopathic) IEM.

11:30 - 12:30

Session 13  Free Papers 5: Dysphagia in neurodegenerative diseases

13.01 FAMILY CAREGIVERS’ LIVED EXPERIENCE OF OROPHARYNGEAL DYSPHAGIA AS A PRIMARY RESULT OF MULTIPLE SCLEROSIS

K. Bree; A. Sheehy; M. Walshe / Trinity College Dublin.

Introduction: Oropharyngeal dysphagia (OD), is associated with Multiple Sclerosis (MS). Despite associations with mortality and morbidity in MS, OD also contributes significantly to caregiver burden. Understanding family caregivers’ experiences of caring for a person with MS (PwMS) with OD is needed to direct services and clinical practice. Lack of evidence is reflected in clinical guidelines that omit caregiver support for the management of OD. The study aims to explore the lived experience of family caregivers caring for PwMS with an OD in an Irish context. Materials/Methods: Interpretative Phenomenological Analysis was used to explore the experiences of caregivers managing OD in the home. Purposive sampling was utilised to recruit participants through a respite centre in Dublin. Five family caregivers participated in unstructured interviews. A topic guide based on the study’s aims was devised and included: day to day management, perceived challenges, and recommendations for healthcare professionals in the management of OD. Results: Analysis revealed 5 superordinate themes: ‘Narrative of Life around MS’, ‘Change in Daily Rituals’, ‘Living in a Context of Loss and Grief’, ‘The Forgotten Expert’ and ‘In the Wilderness’. Superordinate themes also consisted of various emerging themes Figure 1.

Conclusions: Living with a PwMS and OD was reported as a challenge and concern regardless of the presence or absence of non-oral feeding. While there were many positives for speech and language therapy (SLT) input, a number of challenges were also identified. These included: lack of communication therapy, lack of feedback on swallow recommendations and lack of SLT involvement for education on diet modifications and a lack of training for choking management. Study findings provide recommendations on improvement of care with PwMS. This study directs future qualitative research in the experiences of carers living with MS.
**13.02 WHAT PEOPLE LIVING WITH ALS THINK ABOUT DYSPHAGIA? AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS OF PATIENTS’ AND CAREGIVERS’ EXPERIENCES**

D. Lisiecka1; H. Kelly1; J. Jackson1 / 1University College Cork

**Introduction:** Dysphagia often occur as a consequence of Amyotrophic Lateral Sclerosis (ALS) in addition to other concomitant impairments/disabilities. Little is known how people living with ALS understand and experience dysphagia.

**Methods:** We employed an Interpretative Phenomenological Analysis to investigate the meaning of dysphagia for adults with MND (AwMND) and their caregivers. We included 10 AwMND and 10 caregivers from Ireland. All AwMND had confirmed dysphagia and received professional recommendations to manage dysphagia, they had no cognitive impairment, were able to communicate at a sentence level (verbally or non-verbally) and were at least 2 months post ALS diagnosis. The caregivers were regularly involved in diet preparation and/or feeding. We conducted multiple semi-structured interviews with each participant (n=59) supported by observations. We analysed the data using an ideographic approach first before moving to cross-case analysis.

**Results:** There is a discrepancy between participants’ perception of dysphagia and the real impairment. Participants who denied dysphagia (despite being formally diagnosed) developed own coping strategies (often subconsciously). Dysphagia coping strategies were often different for the patient and for the caregiver. Considering non-oral supplementation was an extremely traumatic time for some participants especially if getting contradictory advice from professionals. Participants had some suggestions to change services received for their dysphagia.

**Conclusion:** The understanding of dysphagia in ALS is a complex issue dependent on many factors. Recognising own swallowing problem seems to be a lengthily process not simultaneous with professional diagnosis. This may influence the attitude towards professional recommendations (for example regarding non-oral feeding or diet modifications) and subsequent decisions to comply with them or not.

**Acknowledgment:** Health Research Board (HRB) Ireland.

**13.03 PILOT OBSERVATIONS FROM A MULTIMODAL IMAGING STUDY IN MILD DYSPHAGIC PATIENTS IN EARLY STAGE HUNTINGTON’S DISEASE (HD)**

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**Introduction:** Dysphagia is present in early stage HD and worsens with disease progression; resulting in weight loss and aspiration pneumonia. The underlying mechanisms for oropharyngeal dysphagia (OD) in HD are not well understood. Here, we assess the central neural control of swallowing in HD patients with mild dysphagia combining swallowing assessments with functional [18F]fluorodeoxyglucose Positron Emission Tomography (FDG PET).

**Methods:** Patients with a clinical diagnosis of Huntington’s disease stage I-II were approached. Only patients with mild dysphagia, based on clinical assessments, videofluoroscopy and questionnaires, were eligible. In the pilot phase of the study, we analysed the data of 4 study volunteers- 2 male patients with early stage HD and 2 age-matched healthy female controls. All participants were assessed in a randomised, cross-over 2 scan paradigm of resting condition vs water swallowing at 20-second intervals both for 20 minutes prior to PET scanning. Motion correction was applied to correct for involuntary movements. In order to compare the differences between patients and healthy controls, we calculated the scaled differences in activation during swallowing.

**Results:** Both patients presented mild swallow impairments. In contrast to controls, the patients showed relative deactivation of the frontal cortex (left more than right) compared to other brain regions. Differences were evident between the two groups in other activated brain areas, such as the motor cortex, albeit less pronounced. Conclusions: There are differences in brain activation patterns between early stage HD patients with mild dysphagia and healthy controls. Frontal cortex deactivation during swallowing in early stage HD may be due to impairments of excitatory frontostriatal projections preventing normal activation of the frontal cortex during swallowing.

**Further analysis of the dataset will allow for further concrete conclusions for OD in HD.**

**13.04 ESOPHAGEAL MOTOR DISORDERS IN ATYPICAL PARKINSONIAN SYNDROMES: SYNUCLEINOPATHIES VS. TAUOPATHIES**

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**Introduction:** Oropharyngeal dysphagia is a clinical relevant symptom of neurodegenerative Parkinsonian syndromes leading to severe complications like malnutrition, aspiration pneumonia and a reduced quality of life. In Parkinson’s disease (PD) belonging to the neuropathological group of synucleinopathies, impairment of esophageal motility is also well known to be a frequent phenomenon in all disease stages. In contrast, no data about esophageal motor dysfunction in atypical Parkinsonism including other synucleinopathies or tauopathies exist so far.

**Material & Methods:** In a pilot study, we examined 9 patients with multiple system atrophy (MSA; m/w 3/6, mean age 61.9 ± 8.0, mean disease duration 2.8 ± 1.7 years, mean disease stadium 3.1 ± 1.1 years), 2 patients suffering from Lewy body disease (LBD; 2/0; 77.5 ± 2.1; 3.5 ± 2.1; 3.5 ± 0.7) and 6 patients with progressive supranuclear palsy (PSP; 3/3; 71.8 ± 3.9; 2.2 ± 0.75; 3.3 ± 0.81). For evaluation of esophageal dysphagia we used the High Resolution Manometry (HRM), for analyzing oropharyngeal dysphagia a fiberoptic endoscopic evaluation of swallowing (FEES) was performed.

**Results:** An impairment of esophageal peristalsis was found in 5 of 9 MSA patients (56%) and in both LBD patients (100%) but in none of the PSP patients. Oropharyngeal dysphagia was present in 66.7% of MSA, in 100% of LBD and in 50% of PSP patients. There was no clear correlation between FEES and HRM.
findings. Conclusion: In contrast to PSP, most patients with MSA and LBD showed an impairment of esophageal peristalsis, indicating that a relevant esophageal affection might be limited to synucleinopathies (PD, MSA, LBD), but does not seem to occur in tauopathies (PSP). This clinical finding is in line with recent histopathological studies demonstrating that similar to PD alpha-synuclein pathology may also be found in the enteric nervous system of MSA or LB patients.

13.05 RELATIONSHIP BETWEEN DIET TYPE AND TONGUE PRESSURE IN PATIENTS WITH NEUROLOGICAL DISEASES
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Introduction: This study aims to demonstrate the relationship between diet type and tongue pressure (TP) in patients with Parkinson disease (PD) and the other parkinsonian syndromes (PS), Spinocerebellar degeneration (SCD), motor neuron disease (MND), myotonic dystrophy type 1 (DM1), and Duchenne muscular dystrophy (DMD). Methods: In total, 186 PD, 154 PS, 101 SCD, 109 MND, 85 DM1, and 105 DMD patients were recruited. They underwent separately measurements of TP and videofluoroscopy (VF). The most appropriate diet type was selected based on the VF. We classified the diet types into five levels (Level 0, tube dependent; Level 1, a single consistency; Level 2, multiple consistencies requiring special preparation; Level 3, no special preparation avoiding specific foods or liquid items; Level 4, no restrictions), and analyzed the relationship between the diet-type level and TP. Results: The mean maximum TP in all groups were lower than the values in healthy people. The maximum TP was 21.0 ± 10.1 kPa in the SCD group, and the minimum TP was 13.3 ± 6.1 kPa in the DM1 group. There were differences in distribution of diet-type level and TP depending on the neurological diseases. However, the results suggested the necessity to adjust the diet type for patients with TP <20 kPa, and to change to pureed meals or tube feeding for patients with TP <10 kPa or with inadequate TP measurement.
Introduction: Effects of various oral functions on nutritional status and general conditions are not well elucidated especially in frail or dependent elderly individuals. Thus, in the present study, we investigated the associations and relationships between decline in oral functions and malnutrition in hospitalized frail elderly patients. Material & Methods: Patients who admitted to an acute hospital and referred to its dental clinic were prospectively recruited from October, 2015 to February, 2016. The variables related to oral functions and oral hygiene were collected. Nutritional status was measured using Mini Nutrition Assessment - Short Form (MNA-SF). The nutritional level was divided into malnutrition and normal status based on the MNA-SF scores. The differences in the measures for oral and general conditions by nutritional level and aging were statistically tested using ANOVA. Results: Most of the measures related to oral functions were lower in the malnutrition group than the normal group, which were affected by aging as well. In particular, the items related to muscle strength of the oropharyngeal region and grip strength were significantly lower in patients with malnutrition. The measures for appetite, QOL and ADL were also significantly lower in the malnutrition group than the normal group and the old-old group than the other groups. Conclusions: The findings in this study suggest that the assessment and treatment of decline in oral functions were useful to consider nutritional status in frail hospitalized elderly patients. Moreover, adequate oral management before admission to a hospital can contribute to maintain proper nutritional status when being illness.

16.03 PREDICTING DYSPHAGIA IN THE FRAIL ELDERLY: RISK FACTORS AND PREDICTORS IN MEDICAL HISTORY AND BEDSIDE EXAMINATION

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Introduction: Dysphagia and its related complications can wreak havoc in the frail elderly population. This is especially evident in aged care facilities, where the elderly require high levels of care. Identifying practical and reliable ways to identify those who are at risk for dysphagia is invaluable to geriatric care, as costs incurred due to poorly managed dysphagia can be avoided. This study aimed to identify risk factors that can predict dysphagia both in medical history and during clinical bedside examinations of the elderly. Methods: Six nursing homes were recruited for this study. 164 elderly individuals were clinically examined using the 3 ounce water swallowing test, oro-motor examination, Eating Assessment Tool (EAT10), and Montreal Cognitive Assessment (MoCA). Nursing home medical records were inspected for diseases and current medications. Results: Signs of dysphagia were correlated with impaired functional ability, use of polypharmacy, history of a range of comorbidities, 34% were malnourished according to their Body Mass Index (BMI< 21 kg/m2), 21% according to Unintentional Loss of weight (UoW=Greater or equal=5% in last 6 months), 14% of subjects were in artificial nutrition (75% Enteral, 25% Parenteral). Among orally fed subjects, 60% had standard diet or specific diet for pathologies, 26% had texture modified diets. 34% of patients who were fed by texture modified diets had previous diagnoses of Dysphagia but for 67% of these subjects their pharmacotherapy was containing at least 1 drug which may cause Dysphagia (min 1, max 4). Generally, high presence of different drugs which may cause Dysphagia was found in this population (Table 1). Conclusions: To prevent drug-induced Dysphagia it is necessary to obtain an accurate medication history from each subject. A drug-induced Dysphagia is one of the most easy to correct: when it is feasible the offending agent may be discontinued. Patients have to be subjected to regular monitoring of swallowing function to prevent the
onset of complications.

16.05 THE CHANGES OF CORTICAL ACTIVATION IN SWALLOWING AFTER APPLICATION OF HIGH FREQUENCY RTMS IN OLDER ADULTS
J.W. Park1; H.J. Kim1 /1 Dongguk University Ilsan Hospital

Introduction: Presbyphagia refers to characteristic changes in the swallowing mechanism of healthy older adults. With age, the area of cortical activation was reduced and becoming more symmetrical. On the other hand, non-invasive cortical stimulation could modulate cortical activity and give the improvement in swallowing function. Therefore, we wondered if the high frequency rTMS can make the changes of activity in swallowing cortical area in older adults and stop the functional decrement of swallowing. Materials and Methods: Ten healthy elderly volunteers with right handedness were attended and 18F-labelled FDG-PET scans were obtained in all subjects on three separate occasions (rest, swallowing and swallowing after rTMS). During swallowing study, water was infused orally via a fluid delivery catheter connected to a fluid reservoir at a rate of 600mL/h and subjects swallowed following every 20 sec light flash for 30 min. During rest study, the light source was active but subjects were requested not to swallow. 5Hz rTMS was applied on right pharyngeal motor hot spot for 10 min every weekday for 2 weeks. The intensity of stimulation was set at 90% of the thenar motor threshold of the same hemisphere. The differences between each patient’s active image and the control images (t statistic for p<0.05) on a voxel-by-voxel basis were examined to find significant increases in metabolism using Statistical Parametric Mapping (SPM12). Results: The cortical areas activated by swallowing before rTMS included the bilateral sensorimotor cortex (Brodmann’s areas (BA) 3, 4) and showed symmetry. The cortical areas activated by swallowing after rTMS were same as the area before rTMS. There was no statistical difference between two swallowing activation areas. Conclusions: High frequency rTMS did not affect the activation in swallowing sensory motor cortex in elderly people. It seemed to be impossible to change the aging process related to swallowing using rTMS.

16.06 VALIDATION OF INLINE RHEOMETERY WITH THICKENER BASED LIQUIDS FOR DYSPHAGIA
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Introduction. Dysphagia affects roughly 8% of the world population (Steele, Alsanei et al. 2015) mainly the senior citizens. Clinical studies (Nyström, 2015) and simulation (Salinas-Vázquez, Vicente et al. 2014) experiments shows that elastic properties are relevant for safe swallowing. Gum and starch based thickeners were characterized for their shear rheology and compared using a real time rheology measurement technique: Ultrasound Velocity Profile-Pressure Drop (UVP-PD). The motivation was to confirm the application of inline UVP-PD technique for a future in-vitro swallowing model. The ultimate goal of the project is to develop appropriate textured food for dysphagia patients using an in-vitro swallowing model and comparing it with in-vivo data. Material and methods. Dysphagia thickeners kindly supplied by the companies were characterized for shear rheology with laboratory rheometer ARES-G2 and the in-line rheometer UVP-PD. First normal stress difference (N1) was monitored to display elasticity. Results. Our results (fig. 1 left) show gum based thicker is more shear thinning i.e. less force is needed to make them flow than the proportional to the flow rate. N1 (fig 1 right) increases proportionally with increasing shear rate for gum based thickeners, i.e. they have a greater tendency to elongate. This is so because the xanthan gum based solution with rigid rod like solution conformation and gives an elastic (spring-like) response. The UVP-PD technique show overlapping results with the laboratory technique making the technique relevant for measuring the real time flow properties of a product in tubular geometry. Elasticity measurement is not possible with current setup of UVP-PD. Conclusions. Gum based thickeners are more elastic than the starch based thickeners. In-line PUV-PD rheometry gives the same results as the traditional off-line rheometry making it a potentially useful tool to measure the real time in-vitro rheology of the food products.
Abstract Book

Poster Exhibition Hall
Session 06A  Poster session A: Screening and clinical assessment of OD

06A.01  RELATIONSHIPS BETWEEN ORAL HEALTH, DYSPHAGIA, ASPIRATION PNEUMONIA, NUTRITION STATUS AND EAT-10 SCORE IN HOSPITALISED PATIENTS
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Introduction Different factors can modify nutritional status like age, dysphagia or dental status. Several studies have shown that poor oral health is a risk factor for malnutrition[1,2]. The aim of this study was to describe relationships between oral health, dysphagia, aspiration pneumonia and malnutrition in hospitalised patients. Material & Methods Sociodemographic datas were obtained from medical records and interviews. Length of stay in hospital, history of pneumonia, history of reflux, xerostomia, dysphagia with liquid/semi-solid or solid food and weight loss were questioned. Oral hygiene, dental status, body mass index and nutrition types were evaluated. EAT-10 Swallowing Screening Tool and Oral Health Assessment Tool was administered to patients. Results 300 patients (151 female and 149 male) were included. Mean age was 57.83 (SD:16.769, age range of 19-97). The mean length of stay in hospital was 13.76 (standart deviation: 19.301) days. According to the findings, 30.3% of patients reported reflux disease, 34.3% of them had xerostomia. Additionally 28.6% of them had dysphagia with solid food, 8.6% with semi-solid, and 10.3 % with liquid food. 55% of the patients reported weight loss. Only six patients were reported history of pneumonia. 202 patients were normal teeth, 96 patients had dental prothesis and 2 patients had no teeth. 292 patients had enteral nutrition (8 patients were feeding with nasogastric tube and 5 patients with gastrostomy tube) and 8 patients had parenteral nutrition. When we compared BMI (cut point:19) and OHAT scores, a statistically signifi cant difference was detected (p<0.001). When we compared two groups according to the history of pneumonia with OHAT scores, no statistically significant difference was detected (p=0.001). Also mean OHAT scores were 6.8 and 3.27 for patients with history of pneumonia and no pneumonia respectively. Conclusion Poor oral health plays a role in the frequency of pneumonia and malnutrition. We recommend a policy of systematic oral health assessment in hospitalised patients with orofarangeal dysphagia.

06A.02  PSYCHOMETRIC PROPERTIES OF SCREENING AND EVALUATION TOOLS FOR ORO-PHARYNGEAL DYSPHAGIA IN ADULTS WITH CANCER OUTSIDE OF THE UPPER GI TRACT: A SYSTEMATIC REVIEW
C. Kenny; J. Regan; D. Walsh / 1Our Lady’s Hospice and Care Services; 2Trinity College Dublin

Introduction Oro-pharyngeal dysphagia (OD) associated with Head and Neck and other Upper GI cancers has received much attention in the published literature. Patients with cancers outside of these regions also present with OD and have specifi c care needs related to this<sup>1,2</sup>. Despite this, the availability of tools to screen and evaluate these patients is unclear. This systematic review aims to evaluate the diagnostic accuracy of tools designed to screen, evaluate and examine quality of life impact of OD in patients with cancer outside of the Upper GI tract.Materials & Methods 10 databases (Cinahl, PsycINFO, PubMed, Scopus, Embase, Cochrane Reviews, ScienceDirect, Web of Science, ProQuest Nursing, Proquest Dissertations & A&I) were searched for published studies from inception to May 2016. Search terms related to i) swallowing and dysphagia, ii) test validation iii) screening, evaluation and quality of life. Two independent reviewers screened titles and abstracts and reached agreement on inclusion/exclusion of studies for further review. The methodological quality of studies was to be evaluated using the QUADAS-2. Results Searching yielded 8617 results. This was reduced to 6627 following deduplication. 33 studies required full text review to determine eligibility for analysis. Ultimately, no articles were found to specifically address the needs of the cohort in question and therefore none were available for analysis. Conclusions A large number of tools exist to screen for and evaluate OD, but none are explicitly designed to be carried out on patients with cancer outside of the Upper GI tract. In order to provide safe and evidence-based care to these patients, research is needed to develop new tools. Alternatively, existing tools should be re-validated upon this population.

06A.03  COULD EAT-10 BE A HELPFUL SCREENING TOOL FOR EVALUATING RADIATION-INDUCED DYSPHAGIA IN RECENTLY-DIAGNOSED HEAD AND NECK CANCER? PRELIMINARY RESULTS IN REDYOR STUDY
N. Bofill Soler; A. Guillén-Sola; J. Martínez-Orfila; S. Nieto; C. Barrera; O. Pera; P. Forn / 1Hospital de Tortosa Verge de la Cinta, 2Hospital Mar-Esperança. Parc de Salut Mar.

Introduction Dysphagia is a frequent symptom that needs to be evaluated in this early-stage. Aim: to examine the relationship between Eating Assessment Tool-10 (EAT-10) and Videofl uoroscopy (VFS) for screening risk dysphagia in recently diagnosed head and neck cancer (HNC). MATERIAL and METHOD: we prospectively assessed 26 recently diagnosed HNC patients. All participants were asked to answer EAT-10 and VFS was performed in 4 measurement point: basal, at the begging of Radiotherapy (RT), at the end of RT and at 3-month follow-up after finishing RT. Inclusion criteria were: recently diagnosed HNC submitted to RT (+/- chemotherapy). Exclusion criteria: surgical approach, neurological events, previous RT. RESULTS: 26 HNC cancer (age 59.76 SD 42.8, 80 % males) have been initially included. 14 patients were dropped-out because medical complications or dead. Cancer stage: 52.43% stage IV, 28.37% stage III, 9.5% stage II and 9.5% stage I. VFS was stratified ac-
Drooling (PD) is often suspect in children with severe oropharyngeal dysphagia and refers to saliva spilling over the tongue into the pharynx. Anterior drooling (saliva loss from the mouth) is frequently reported in children with neurodevelopmental disabilities. Posterior drooling (PD) is often suspect in children with severe oropharyngeal dysphagia and refers to saliva spilling over the tongue into the pharynx. PD may lead to recurrent respiratory problems or aspiration pneumonia. A salivagram is supposed to be the golden standard to demonstrate aspiration of saliva, but is invasive and time consuming in children with severe neurological movement disorders. The pediatric posterior drooling scale (PPDS) is a screening tool to score the presence and severity of PD by the use of cervical auscultation (CA). Previous research showed that CA may be used to evaluate post-swallow respiration. The aim of this pilot study is to assess the interrater reliability and construct validity of the PPDS. Methods The PPDS scores the sequence of breathing and swallowing on a 5 point scale (fig. 1). In 20 children with drooling the sound of a saliva swallow was recorded via CA and saved as a .m4a file. Three experienced speech language therapists applied the PPDS to the files. Interrater reliability was assessed with an intraclass correlation coefficient (ICC). Construct validity was determined by calculating the correlation between the scores on the PPDS and the Eating and Drinking Ability Classification System (EDACS) levels, which we expected to have a high correlation with the PPDS2. Results Preliminary results show an excellent interrater reliability (ICC = .988). There is a significant positive correlation between the PPDS and the EDACS level (Kendall’s tau = .68, p< .05). Conclusion In children with drooling, both anterior and posterior drooling must be taken into account. The PPDS can be scored reliably and may be an appropriate screening tool to score the presence and severity of PD. More research with a larger sample is needed. Fig. 1 PPDS scores.

<table>
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<th>3-month follow up</th>
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<th>Sensitivity</th>
<th>Specificity</th>
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06A.04 RELIABILITY AND VALIDITY OF THE PEDIATRIC POSTERIOR DROOLING SCALE: A PILOT STUDY

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Introduction Anterior drooling (saliva loss from the mouth) is frequently reported in children with neurodevelopmental disabilities. Posterior drooling (PD) is often suspect in children with severe oropharyngeal dysphagia and refers to saliva spilling over the tongue into the pharynx. PD may lead to recurrent respiratory problems or aspiration pneumonia. A salivagram is supposed to be the golden standard to demonstrate aspiration of saliva, but is invasive and time consuming in children with severe neurological movement disorders. The pediatric posterior drooling scale (PPDS) is a screening tool to score the presence and severity of PD by the use of cervical auscultation (CA). Previous research showed that CA may be used to evaluate post-swallow respiration. The aim of this pilot study is to assess the interrater reliability and construct validity of the PPDS. Methods The PPDS scores the sequence of breathing and swallowing on a 5 point scale (fig. 1). In 20 children with drooling the sound of a saliva swallow was recorded via CA and saved as a .m4a file. Three experienced speech language therapists applied the PPDS to the files. Interrater reliability was assessed with an intraclass correlation coefficient (ICC). Construct validity was determined by calculating the correlation between the scores on the PPDS and the Eating and Drinking Ability Classification System (EDACS) levels, which we expected to have a high correlation with the PPDS2. Results Preliminary results show an excellent interrater reliability (ICC = .988). There is a significant positive correlation between the PPDS and the EDACS level (Kendall’s tau = .68, p< .05). Conclusion In children with drooling, both anterior and posterior drooling must be taken into account. The PPDS can be scored reliably and may be an appropriate screening tool to score the presence and severity of PD. More research with a larger sample is needed. Fig. 1 PPDS scores.

06A.05 THE INCIDENCE OF ORODYSPHAGIA: A PROSPECTIVE STUDY IN PATIENTS ON A FOLLOW-UP AND REHABILITATION WARD

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Introduction Dysphagia consists in alteration of the swallowing mechanism due to different pathological conditions. It is an under-diagnosed digestive disorder; the exact prevalence of dysphagia is not clear. Dysphagia complications can lead to malnutrition, dehydration, bronchoaspirative pneumonia and death. Our aim was to determine the incidence of orodysphagia in all patients on a follow-up care and rehabilitation ward. Materials and methods. This prospective study included all patients admitted to follow-up care and rehabilitation ward in April 2016. We performed bedside screening to detect orodysphagia by the Volume-Viscosity Swallow Test (V-VST) in all patients on admission. The V-VST is an effort test that uses boluses of different volumes and viscosities to identify clinical signs of impaired efficacy (impaired labial seal, piecemeal deglutitions and residue) and impaired safety of swallow (cough, voice changes, and oxygen desaturation >3%). Key Results. A total of 25 patients were included in the study; the majority of whom presented advanced age (77 years), neurologic pathology (80%) and under nutrition (87.5%) The V-VST of patients included in the study demonstrated the following: 76% presented orodysphagia, 19 % presented signs of impaired efficacy of swallow, 28.5 % presented signs of impaired safety and 28.5% presented impaired efficacy and safety. Conclusion. Early and systematic bedside screening of orodysphagia on hospital wards using a simple, short and inexpensive test is useful for detecting patients at risk of nutritional and respiratory complications. Thereafter, these patients require more conclusive instrumental evaluation which should enable more efficient patient management including dietary changes in bolus volume and viscosity as well as rehabilitation procedures. Acknowledgments: The authors are grateful to Nikki-Sabourin-Gibbs, Rouen University Hospital, for editing the abstract.

06A.06 DEVELOPMENT AND VALIDATION OF THE ROC SCALE IN ADULTS WITH INTELLECTUAL DISABILITY

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Introduction: Choking is a significant but preventable cause of death for adults with intellectual disability (ID). There is currently no validated, objective measure that can identify people with ID who are at risk of choking. The aim was to develop and validate such an instrument. The outcome is a scale (RoC scale) that can be used to determine the level of choking risk for an adult with ID. Material & Methods: The study had 2 stages. Stage 1: development of the scale, involved examination of research literature, review of existing scales and construction of the RoC scale. Stage 2: validation of RoC scale, employed a cross sectional
survey design. 8 Speech and Language Therapists (SLTs) completed the scale with 45 adults with ID and provided their opinions via a feedback questionnaire on its face, content, construct and ecological validity. They also rated their perception of individuals’ choking risk 2-3 days before completing the RoC. This rating was placed in a sealed envelope. Results: A significant correlation was detected between the level of choking risk as perceived by the SLTs and the level of choking risk indicated by the RoC scale (p<0.001) for the 45 adults with ID, indicating strong content and construct validity. SLTs’ feedback indicated that the scale was of an appropriate length and that it was quick and easy to complete. Suggestions were made regarding additional risk factors to be included and some minor modifications were recommended for scoring. A number of SLTs proposed that the RoC scale could be used by other multi-disciplinary team members with SLT support in place. Conclusions: The RoC scale can aid teams to accurately identify adults with ID who are at an increased risk of experiencing a choking episode. It may also be of benefit when it is used by SLTs to raise awareness of choking risk and to increase compliance with dysphagia management recommendations. Ultimately, it can be validated with other populations who are at risk of choking.

06A.07  Dysphagia in Patients with Cervical Spinal Cord Injury: Retrospective Study
R. Cascioli1; G.B. Castellani1; S. Besi1; M. Fiorani; D. Fontana; R. Locatelli1; "Montecatone Rehabilitation Institute.
Introduction: it is clinically recognized that patients with a cervical lesion of the spinal cord have frequently swallowing problems. Many studies have shown that a combination of multiple factors, such as surgical approach, mechanical ventilation and presence of tracheotomy, have to be considered as risk factors of developing swallowing disorders, although every single factor cannot be statistically associated with dysphagia. Material & Methods: a total of 19 patients with cervical spinal cord injury (SCI) from Montecatone Rehabilitation Institute were included in our study. Respiratory issues and variously mixed factors (prolonged mechanical ventilation, tracheotomy, surgical fixation and neck collar) were detected in all patients. Theirs swallowing abilities were assessed clinically, by a SLP (Logemann 1989) and endoscopically (FEES). Results: dysphagia was identified in 18 patients. BSE has always recorded cough ineffectiveness, pharynx sensibility and propulsive wave impairment, but an altered vocal quality and food trail at the suctioning have been noticed just occasionally. The pharyngeal residue rate was determined precisely just by FEES, likewise anatomically pharyngeal alterations due to surgical fixation. Thereby a specific therapy (inclusive of neuromuscular treatment and the most suitable dietary modifications) has been organized in order to prevent pulmonary complications. Currently, 13 patients have sufficient oral caloric intake, although some of them need textural dietary restrictions. Conclusions: in patients with cervical SCI, complex clinical conditions and long hospitalized, an integrate assessment both by means of BSE and FEES could be useful in order to estimate as best the post deglutition aspiration risk and thereby organized the most suitable behavioural/dietary measures. Further analysis is needed to establish specific risk factors such as critical illness condition.

06A.08  Validation and Cultural Adaptation of the SWAL-QoL in Greek Language
V.C. Georgopoulou1; M. Perdikogianis1; M. Mouskentari1; L. Psychogius1; M. Oikonomou1; G.A. Malandraki1; "TEI of Western Greece; 2Purdue University
Introduction: The purpose of this work was to translate and adapt the 44-item SWAL-QoL into Greek and examine its validity against the WHOQoL-BREF 30 in a Greek population with dysphagia. Methods: Two groups were included in the study. The first group consisted of 71 adults (42 males) diagnosed with oropharyngeal dysphagia (mean age: 58.3 year; range: 18 to 87 yoa), recruited from a variety of hospitals, rehabilitation centers and private clinics. The second group was a control group of 39 adults (19 males) without dysphagia with a mean age of 60.2 years (range: 18 to 84 yoa). Participants completed the SWAL-QoL, after it was translated (using back translation to ensure linguistic validity) and culturally adapted into Greek, and the Greek 30-item version of the WHOQoL-BREF. Internal consistency was assessed using Cronbach’s «alpha». External construct validity was tested via Spearman rho correlations computed between subscales of the SWAL-QoL and items of the WHOQoL-BREF. Results: Internal consistency for each of the ten subscales and the physical symptoms scale as measured by Cronbach’s «alpha» was between 0.810 and 0.932, indicating good internal reliability. Moderate to strong correlations were found between seven of the ten subscales of the Greek SWAL-QoL and subscales of the WHOQoL-BREF 30 (0.401<<rho><0.632). The Greek version supports the findings of other cultural adaptations of SWAL-QoL that both SWAL-QoL and WHOQoL-BREF measure the quality of life, but SWAL-QoL is specialized in estimating the effect of dysphagia on the quality of life. Conclusion: Our results indicate that the Greek version of SWAL-QoL is valid and can be used for assessing quality of life in patients with dysphagia in Greek language. This validation allows the use of this tool in Greece, facilitating the effort to investigate and document quality of life outcomes for Greek patients and enhancing evidence-based practice in a newly developing field in our country.

06A.09  Signs of Pharyngeal Dysphagia on Clinical Bedside Swallow Examination: Identifying Signs and Testing Study Feasibility
J. Keane1; "Trinity College Dublin/Tallaght Hospital Dublin
Introduction: Dysphagia post stroke can cause aspiration and increased mortality. Instrumental assessment has greater accuracy to detect dysphagia than clinical bedside swallow examination (CBS). A valid reliable CBSE is required. Studies suggest using some clinical CBSE
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signs to detect dysphagia.1-2 It is unclear which signs are most accurate. We examined the feasibility of a specific protocol investigating the relationship between 7 clinical CBSE signs (dysarthria, dysphonia, abnormal gag reflex, abnormal vocalis tone, cough after swallow, change in vocal quality after swallow and multiple swallows per bolus) with pharyngeal dysphagia in acute stroke. Materials and Methods: Participants were recruited within 7 days of stroke. In a busy acute hospital, feasibility of participant recruitment and protocol tolerance was determined. CBSE protocol with simultaneous Fiberoptic Endoscopic Evaluation of Swallowing (FEES) was completed. Associations between CBSE signs, aspiration and pharyngeal residue were examined. Diagnostic accuracy values for each sign to detect pharyngeal dysphagia were calculated. Results: Nine participants were recruited. All tolerated the protocol. No significant associations were found between clinical signs on CBSE, aspiration and pharyngeal residue but trends were identified. Cough after swallow approached adequate sensitivity (80%) and specificity (75%) for aspiration. Multiple swallows had potential to detect aspiration (sensitivity 100%; specificity 25%) and pharyngeal residue (sensitivity 100%; specificity 50%). Conclusions: There was excellent participant tolerance of the protocol but problems with data collection could be resolved with protected researcher time; facilitating recruitment of larger numbers for statistical power. Trends suggest potential relationships between multiple swallows per bolus, cough after swallow and pharyngeal dysphagia. Given tolerance, FEES is useful as an early post stroke examination. A new study pr.

06A.10 RELATIONSHIP BETWEEN TONGUE PRESSURE AND PHARYNGEAL RESIDUES IN DYSPHAGIC PATIENTS

J. Magara1; K. Tsuji; M. Watanabe; T. Tujimura; K. Harı; M. Inoue1 Division of Dysphagia Rehabilitation, Niigata University

Introduction: Measurement of tongue pressure is widely utilized to evaluate tongue motor function quantitatively. This study is aimed to characterize the property of tongue pressure in dysphagic patients and consider the correlation between tongue pressure and pharyngeal residues. Material & Methods: Tongue pressure was measured using the balloon of the disposable intraoral pressure probe (the tongue pressure measurement system, JMS Co., Japan). Participants included 25 postoperative oral cancer, 34 neurodegenerative patients and 10 normal healthy volunteers over 50 years old. They were asked to compress the probe between the tongue and hard palate for 7 seconds with maximum voluntary effort. The tongue pressure was measured three times in both anterior and posterior positions. The outcome measurements were maximum voluntary tongue pressure (TPmax), total duration time over 50 % of TPmax (50% time) and 80% (80% time) (Figure 1). The averaged values were analyzed using ANOVA with factors: disease (Oral cancer, Neurodegenerative, Normal), position (Anterior, Posterior). The correlation between tongue pressure and pharyngeal residues after 3-ml thickened liquid swallowing in videofluoroscopy was also evaluated. Statistical significance was set at \( P < 0.05 \). Results: TPmax is significantly different among the diseases; normal adults > neurodegenerative patients > post-operative oral cancer patients (\( P < 0.01 \)). 80% time in posterior position in both dysphagic patient groups is significantly shorter than normal adults (\( P < 0.05 \)). Mean value of TPmax in patients with pharyngeal residues significantly smaller than it is in patients without pharyngeal residues (\( P < 0.05 \)). Conclusion: This study demonstrated different expression patterns of tongue pressure among patient groups. The pattern of tongue pressure can be utilized to estimate dysphagic grade such as oropharyngeal residues.

06A.11 PROSPECTIVE DOUBLE-BLIND STUDY OF THE AGREEMENT BETWEEN CSE VERSUS FEES FOR PRESENCE, TYPE AND SEVERITY OF DYSPHAGIA, PENETRATION AND ASPIRATION AND DIETARY GUIDELINES

H. Massonet1; J. Vanderwegen2; M.A. Ryckaert3; A.S. Beeckman4 Speech Language Pathology & Audiology, Artevelde Hogeschool, Gent, Oost-Vlaanderen; 2Speech Language Pathology & Audiology, Thomas More University College, Antwerp; 3ENT and Communication Disorders, Jessa Hospital, Saint-Ursula, Herk-De-Stad, Limburg; 4Voice & Swallowing Center, AZ Maria Middelares, Oost-Vlaanderen.

Introduction: This study compared CSE vs. FEES in an adult dysphagia population in its ability to 1) identify presence, type and severity of dysphagia and interrater reliability, 2) correlate CSE-assessed pharyngeal events to FEES (residue, glottic closure, penetration and (silent) aspiration) and 3) provide adequate dietary guidelines using FOIS. Material & Methods: Convenience sampling enrolled 30 patients with varying etiologies. CSE was ASHA-based and included Oral Motor Examination and trial swallows. FEES used the Langmore protocol. Exams were video-recorded, comments were removed and randomly ordered. 4 experienced SLP, not involved in selection or testing, scored all recordings. Interrater reliability for CSE and FEES was computed using Krippendorff’s Alpha (\( k_{\text{alpha}} \)) with \( k_{\text{alpha}} \geq 0.80 \). Considered reliable for further analyses. \( \chi^2 \) assessed CSE-FEES association. Odds ratio (OR) determined predictive value of each parameter. Results: 1) \( k_{\text{alpha}} \) of CSE-dysphagia was 0.82 (significant \( \chi^2; OR 4.6 \)). \( k_{\text{alpha}} \) for CSE pharyngeal dysphagia and severity were

<table>
<thead>
<tr>
<th>CBSE sign</th>
<th>Sens</th>
<th>Spec</th>
<th>PPV</th>
<th>NPV</th>
<th>LR+</th>
<th>LR-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysarthria</td>
<td>80%</td>
<td>25%</td>
<td>51%</td>
<td>50%</td>
<td>1.07</td>
<td>0.09</td>
</tr>
<tr>
<td>Dysphonia</td>
<td>20%</td>
<td>90%</td>
<td>15%</td>
<td>33%</td>
<td>0.60</td>
<td>1.60</td>
</tr>
<tr>
<td>ADR</td>
<td>62%</td>
<td>75%</td>
<td>75%</td>
<td>80%</td>
<td>0.35</td>
<td>0.53</td>
</tr>
<tr>
<td>ARC</td>
<td>40%</td>
<td>75%</td>
<td>30%</td>
<td>50%</td>
<td>1.60</td>
<td>0.80</td>
</tr>
<tr>
<td>CAS</td>
<td>85%</td>
<td>75%</td>
<td>80%</td>
<td>75%</td>
<td>3.22</td>
<td>0.27</td>
</tr>
<tr>
<td>VAS</td>
<td>40%</td>
<td>55%</td>
<td>40%</td>
<td>50%</td>
<td>1.00</td>
<td>0.80</td>
</tr>
<tr>
<td>MOD</td>
<td>50%</td>
<td>25%</td>
<td>50%</td>
<td>100%</td>
<td>1.13</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes: Sens = sensitivity, Spec = specificity, PPV = positive predictive value, NPV = negative predictive value, LR+ = positive likelihood ratio, LR- = negative likelihood ratio, ADR = abnormal gag reflex, ARC = abnormal vocalis tone, CAS = cough after swallow, VAS = voice change after swallow, MOD = multiple swallows per bolus.

Figure 1. Representative tongue pressure waveform.

Figure 1. Representative tongue pressure waveform.
inadequate ($k_{alpha} = .62; .77$). 2) CSE-penetration showed $k_{alpha} = .92$ (significant $<chi^2> 2$ OR 4.1). Poor agreement was found for glottic closure, aspiration and silent aspiration ($k_{alpha} = .13; .47; .00$). 3) $k_{alpha}$ CSE-FOIS was .82 but without significant $<chi> 2$. Conclusions: This comparison of CSE and FEES in a general dysphagia population confirms findings from specific populations. CSE-dysphagia detection failed in $18\%$ and couldn’t assess type or severity. CSE-penetration and aspiration didn’t reach ASHA goals. Reliability and correlation with pharyngeal events was poor. These results preclude CSE to determine therapy content and diet level.

**06A.12 DEVELOPMENT OF THE SWALLOWING ACTIVITY AND PARTICIPATION PROFILE (SAPP) - A QUALITY OF LIFE QUESTIONNAIRE BASED ON THE ICF FRAMEWORK**

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1The University of Hong Kong; 2The Hong Kong Society for the Blind.

Introduction: Dysphagia-related quality-of-life (QoL) questionnaires provide insight into the disorder and treatment progress and outcomes. Current questionnaires are often designed with narrow target populations and present with inconveniences such as long administering time and complex scoring system, and does not address all limitations imposed by dysphagia. The Swallowing Activity and Participation Profile (SAPP) aims to adopt the International Classification of Functioning, Disability and Health (ICF) framework to address the shortcomings in currently available QoL questionnaires. This study is ongoing to improve and validate the SAPP in various dysphagic populations. Method: The SAPP was initially devised by 3 speech therapists as a 38-item questionnaire across 5 sections measured on a 10-point Likert scale. Its psychometric properties were investigated in elderly individuals and compared with the M.D. Anderson Dysphagia Inventory (MDADI). It was then reduced to a 30-item questionnaire across 5 sections measured on a 5-point scale. A new section in the final version addresses the impact of environmental support on QoL. The final SAPP was validated against the Eating Assessment Tool (EAT-10) on 63 elderly individuals. RESULTS The early version of the SAPP (38 items) showed good construct validity and convergent validity to the MDADI. Dysphagic individuals had significantly higher scores than those without dysphagia. However test-retest reliability was imperfect. The later version of the SAPP required less time to administer, and demonstrated good construct validity and convergent validity to the EAT-10. CONCLUSION The SAPP is a questionnaire that utilises the ICF framework to evaluate dysphagia-related quality of life. It has demonstrated overall fair psychometric properties in the geriatric population. Further validation of the SAPP in other dysphagic populations is indicated. This project was partially funded by the Public Policy Research Fund, Hong Kong.

**06A.13 SWALLOW SCREENING IN THE REPUBLIC OF IRELAND: SPEECH AND LANGUAGE THERAPY PRACTICES, OPPORTUNITIES AND CHALLENGES**

M. Ryan1; M. Walshe2
1Department of Clinical Speech and Language Studies; 2Our Lady’s Children’s Hospital Crumlin

Introduction: Two speech and language therapists, in consultation with a Nurse Practice Development Unit, in an acute Irish paediatric hospital devised the ROSE Feeding Checklist (Figure 1); a screening tool for nurses to use with infants to determine readiness for feeding, feeding skills, safe, efficient, (ROSE) feeding checklist: Towards establishing validity.

**06A.14 PERSPECTIVES OF NURSING STAFF ON THE READINESS, ORAL SKILLS, SAFE, EFFICIENT (ROSE) FEEDING CHECKLIST: TOWARDS ESTABLISHING VALIDITY**

J. Sinclair1; Z. Greene2; C. Cotter2; L. Brogan1; F. O’Neill1; M. Walshe1
1Our Lady’s Children’s Hospital Crumlin; 2Trinity College Dublin

Introduction: Two speech and language therapists, in consultation with a Nurse Practice Development Unit, in an acute Irish paediatric hospital devised the ROSE Feeding Checklist (Figure 1); a screening tool for nurses to use with infants to determine readiness for feeding, feeding skill, and need for onward referral to speech and language therapy. The aims of this research are to 1) establish face, content and ecological validity of the ROSE Feeding Checklist from the perspective of nurses, 2) finalise the form prior to ward-based trials, 3) determine the format for training nurses in its use. Materials & Methods: A qualitative survey method was adopted in this descriptive, prospective, single-centre research design. Nine nurses were recruited. Structured interviews were open for 12 weeks. Results: Fifty-eight SLTs responded. Responses suggest that SLTs in ROI prefer to use personal non validated swallow screening tools but are reasonably confident in their diagnostic accuracy. There was considerable variation with regard to models of screening used across service delivery settings and in factors influencing selection of screening tools. Common challenges included limited resource and administration difficulties as well as lack of clinical guidelines. Conclusions: Consistent with previous research on dysphagia screening practices, this study suggests a lack of consistency within SLT practices in dysphagia assessment in ROI. Possible reasons for this are proposed. Clinical guidelines should be developed to advance the assessment process and provide a common language for all clinicians involved in swallow screening protocols. Education on diagnostic accuracy and standardisation of protocols may improve patient care and increase early reliable identification of dysphagia.
conducted individually. Sessions were audio recorded and transcribed verbatim. Content analysis was used to analyze the interview data. Results: The majority of nurses welcomed the ROSE Feeding Checklist and commented on its potential for ease of use. They approved the tool would be suitable on infant-specific wards and across pediatric hospital settings, but there was disagreement on its suitability on children-specific wards. In terms of training, there was a preference for a formal training programme, delivered through brief, ward-based sessions by a clinical nurse facilitator. Conclusion: The ROSE Feeding Checklist represents a key development in the screening and overall management of feeding and swallowing problems in infants. Obtaining user feedback is critical to the validation process of test instruments.

Checklist results were shared with nurses to identify those eligible for a formal training programme, delivered through brief, ward-based sessions by a clinical nurse facilitator. Conclusion: The ROSE Feeding Checklist is complete. Further validation, piloting, and design of training are required before it is publically available to nurses working in acute pediatric hospitals. Figure 1

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06A.15 THE CORRELATION BETWEEN SWALLOW SCREENS AND ASPIRATION D. Smithard1 | Dept of Electronics and Digital Arts, University of Kent
Dysphagia with aspiration is a potentially fatal condition. Many stroke services screen all admissions for the presence of dysphagia and possible aspiration on arrival either to the ward or Emergency Department. Clinicians need to have confidence in the ability of the screen to detect the possibility that there is a concern (Sensitivity, Positive Predictive Value, PPV) with the ability to swallow. At the same time a screen that over identifies will result in many people being denied oral food and liquid inappropriately (Specificity, Negative Predictive Value, NPV). Methodology: Pubmed, Embase and CINHAL were searched using the headings, stroke, dysphagia, swallow screen. Results: 3000 citations were identified. From these 26 papers were identified that met the criteria of a screen being tested against a Gold Standard (FEES/Videofluoroscopy) and reported sensitivity, specificity (26 studies), NPV and PPV (10 studies). The mean size of studies was 118 (range 30-300), the median sensitivity was 74% (30-100), specificity 77% (29-100). There was no correlation between the size of study and the sensitivity (r=0.10) or specificity (r=0.20) of the screen. There was no correlation between sensitivity and specificity (r=-0.35). If swallow screens where the sensitivity was <70% were removed from the calculations (5 studies), then the correlation improved (r=1). Specificity showed a stronger correlation with PPV (r=0.40) compared to sensitivity (r=0.28). NPV only had a weak correlation with sensitivity (r=0.48) and specificity (r=0.24).
Conclusions: Most swallow screens used in the acute phase of stroke are based on the use of varying volumes of water. The screen is scored as pass/ fail. The MASA (clinical signs) and V-VST (commence with nec- tar thick) are an exception to this. Many swallow screens are used by nursing staff or physicians who are experienced and may not be basing their clinical decision on the swallow screen alone. Further work is required to identify those el.

06A.16 TRANSLATION OF THE TOR-BSST INTO BRAZILIAN-PORTUGUESE: MULTI-STEP FORWARD AND BACKWARD PROCESS
G. Vanin1 A. Pacheco2, R. Martino1 | University of Toronto; Universidade de Sao Paulo
Introduction: Dysphagia is frequent in patients with stroke, necessitating a screening tool for early detection to prevent serious consequences like aspiration pneumonia. There are few validated screenings tools in Brazilian-Portuguese. The TOR-BSST<copyright> is an English screening tool, developed to identify dysphagia in patients with stroke, which is globally available and recognized to have high sensitivity and predictive value. The aim of the present study was to translate the English TOR-BSST<copyright> to Brazilian-Portuguese. Methods: Professional translators and Speech Language Pathologists (SLP) collaborated on a four phase “forward-backward” process to translate the TOR-BSST<copyright> form consisting of two pages and 671 words. At each phase, all non-literal translation types were rated according to 6 categories: Alteration (ALT), Omission (OM), Clarification (CLA), Cultural Adaptation (CULT), Lexical Preference (LP), and Not Otherwise Specified (NOS). Raters were two independent SLPs, each bilingual in both English and Brazilian-Portuguese. Discrepancies in ratings were reconciled with a third rater. Results: Overall, the number of translation types decreased across Phases, from A (n=65) to D (n=2). The most prevalent type by category was LP (n=58), followed by CLA (n=21), ALT (n=12), CULT (n=4) and OM (n=3). Within each category, the number of events consistently decreased with each subsequent step to a final count in Phase D of 0 (for ALT, OM and CULT) and 1 (for CLA and LP). The final translation was a Brazilian-Portuguese TOR-BSST<copyright> version with 742 words. Conclusion: This rigorous, collaborative translation process was effective in producing a final Brazilian-Portuguese TOR-BSST<copyright> adaptation, maintaining its original meaning without compromising the natural Portuguese understanding.

06A.17 BSST<copyright> adaptation, maintaining its original meaning without compromising the natural Portuguese understanding.

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06A.17  VOICE ACOUSTIC PARAMETERS BEFORE AND AFTER SWALLOWING IN OROPHARYNGEAL DYSPHAGIA

D. Afonso¹, E.M.G Fabren¹, P.C. Cola², R.G Silva³

¹Paulista State University-Marilia, São Paulo/Brazil; ²Marilia University-Marilia, São Paulo/Brazil

Introduction: The voice disorders after swallowing is considered a clinical finding for penetration and aspiration in dysphagia. The purpose of this study was to analyze the acoustic parameters of the voice before and after swallowing in neurogenic oropharyngeal dysphagia. Material and Methods: Prospective cross-sectional design. Included 20 individuals with neurogenic oropharyngeal dysphagia, 12 male and 8 female with 61 years old average. For clinical evaluation it was used a specific protocol and two consistencies of food. For the vocal assessment the voices were recorded in quiet environment, treated acoustically and the posterior analysis were carried out using the Multi-Dimensional Voice Program – MDVP of KayPentax. The acoustic parameters considered were the Mean fundamental frequency ( MF0), Jitter, Shimmer, Fundamental frequency variation (vF0), Peak-to-peak amplitude variation (vAm) and Soft phonation index (SPI). Results: 90% had acoustic parameters of the voice increased before swallowing, regardless of gender or consistency of food, which showed a decrease on the pitch of the voice. MF0 values decreased after swallowing, regardless of gender or consistency of food, which showed variability in clinical practice amongst SLTs/SLPs in Greece, and there is a need for further standardisation. This study gives valuable insight directly into the dysphagia assessment practice in Greece and indicates the need to develop a consensus statement and clinical guidelines.

06A.18  SLP/ SLT CLINICAL PRACTICE FOR DYSPHAGIA SCREENING AND DIAGNOSIS IN GREECE: AN INTERNET-BASED SURVEY

T. Tegou¹, K. Sdrou³, S. Petro², A. Charpentier², G. Milathianakis³, A. Spyropoulou¹, E. Michos², Selle³

¹Association of Scientists of Speech Pathology/Speech Therapy of Greece; ²The University of Manchester, Association of Scientists of Speech Pathology/Speech Therapy of Greece; ³Association of Scientists of Speech Pathology/Speech Therapy of Greece

Introduction: While speech and language pathologists/therapists’ role in screening and diagnosing dysphagia is acknowledged worldwide, ‘usual’ practice amongst countries vary. The identification of current clinical practice patterns and current use of diagnostic tools and methods in dysphagia is vital prior to implementing clinical guidance. This study is the first step in our attempt to develop and promote clinical practice guidelines for dysphagia screening and diagnosis in Greece. Methods: An online survey questionnaire was devised and disseminated via SurveyMonkey to SLPs/SLTs and advertised by the Association of Scientists of Speech Pathology/Speech Therapy of Greece. Only the responses of those working on dysphagia were registered and recorded for further analysis. Results: The total responders (n=155) provided their responses over 3 months. Nearly half the responders had 5-10 years’ experience on dysphagia (45%). Half the responders assessed dysphagia patients in private settings following referral by medical staff (92%). Dysphagia post Stroke and feeding/swallowing impairments in autism spectrum disorders showed the highest prevalence in responders’ caseload. Sixty-seven percent replied that no screening takes place at their establishment, while 95% of the responders use non-standardised assessments for dysphagia assessment, which latter may last up to 60 minutes in duration (65%). Nevertheless up to 90% of the responders repeat their assessments at regular intervals. Conclusion: The response rate was relatively high, compared to surveys published for practices in other demographically similar countries. There is variability in clinical practice amongst SLTs/SLPs in Greece, and there is a need for further standardisation. This survey gives valuable insight directly into the dysphagia assessment practice in Greece and indicates the need to develop a consensus statement and clinical guidelines.

14:30 – 15:00  Poster Session 04B

Poster session B: Instrumental assessment and dysphagia diagnosis

06B.01  DYSPHAGIA CLASSIFICATION AND THERAPY: ONE YEAR USING AN ASSESSMENT PROTOCOL

S. Vaz-Freitas¹, A. Martins¹, I. Carvalho²

¹Speech Therapy Department of Otolaryngology Service, Centro Hospitalar do Porto; ²Speech Therapy Department, Universidade Fernando Pessoa, Porto

Introduction: the aim of this paper is to characterize the clinical sample of a year of hospital practice using the “Ororhyngeal Dysphagia Evaluation Protocol” proposed by Vaz-Freitas and Carvalho. Material & Methods: dysphagia assessment includes clinical and instrumental evaluation of swallowing. Commonly it also involves the evaluation of motor functions and pharyngo-laryngeal structures, while offering food in different consistencies. Thirty-four cases were assessed and the description and analysis of clinical variables are presented. Statistical Package for Social Sciences (SPSS) version 23 was used to describe the sample and compare data. Nonparametric Spearman test, with 95% confidence interval is referred. Results: among 34 patients, 28 were male (82,4%) and 6 female (17,6%). The mean age was 63.09 years old, ranging between 22 and 90 years old. According to the Functional Oral Intake Scale (FOIS), most of the cases belong to level 6 (29,4%), followed by level 5 (23,3%). Relation between risk/complaints of dysphagia, FOIS type of feeding and pathways turn to be statistical significant, except the association of risk/complaints of dysphagia, its classification and the FOIS. Conclusion: with this research we conclude...
that the protocol used in this study can be useful in the assessment of dysphagia, with application in many ages and diagnosis. Larger studies should be performed for the validation of this instrument.

068.02 DYSPHAGIA ASSESSMENT - PROPOSAL OF A PORTUGUESE OROPHARYNGEAL DYSPHAGIA EVALUATION PROTOCOL

S. Vaz-Freitas1; A. Martins2, I. Carvalho1 / 1Speech Therapy Department of Otolaryngology Service, Centro Hospitalar do Porto; 2Speech Therapy Department, Universidade Fernando Pessoa, Porto

Introduction Dysphagia have serious repercussions on the health status of the person affected by it. Therefore, it is important to detect this swallowing perturbation as early as possible. This justifies the need of a form of objective and systematic assessment. Vaz-Freitas and Carvalho proposed the “Oropharyngeal Dysphagia Evaluation Protocol”. The aim of this study was to analyze and describe swallowing dysphagia patients, to construct the application manual of the protocol, to validate the measure, analyze the socio-demographic characteristics of the sample, quantify and enumerate its main complaints, describe general health parameters, the diagnosis, type of feeding and pathways, the dysphagia classification and treatment/provided orientations. Relations will be established between the diagnosis and the severity of dysphagia, the adopted treatment and complaints/risk for dysphagia, the number of complaints, type of feeding and pathway in relation to dysphagia classification and treatment guidelines. Finally, association between dysphagia classification and treatment orientations.

Material & Methods: A retrospective analysis was performed based on the clinical records of patients of Centro Hospitalar do Porto - Hospital Geral de Santo António between 2014 and 2015 and, consequently, submitted to a videofluoroscopy examination. The oropharyngeal dysphagia evaluation protocol results were analyzed. The Statistical Package for Social Sciences (SPSS) version 23 was used to describe the sample and compare data. Nonparametric Spearman test, with 95% confidence interval is referred. Results: Study sample is composed by 34 patients, 28 male (82.4%) and 6 female (17.6%). The mean age was 63.09 years old, ranging between 22 and 90 years old. The described symptoms were choking (79.3%), recurrent pneumonia (23.5%), speech difficulties (5.9%), drooling (11.8%), hypernasality (2.9%), increased oral transit time (17.6%) and cough (5.9%). Referred diagnosis were: disorder of diet (5.3%), aspiration (4.7%), upper airway disease (0.6%), lower airway disease (0.6%), chemical injury (0.6%), infection (0.6%), and unknown (0.6%).

068.03 PROPOSAL ON HOW TO PREPARE THICKENED LIQUIDS FOR FIBEROPTIC ENDOSCOPIC EVALUATION OF SWALLOWING (FEES) BASED ON INTERNATIONAL DYSPHAGIA DIET STANDARDISATION INITIATIVE (IDDSI)

H.V. Magalhães Junior1; L. Pernambuco2; P.C. Cola3; S.M. Motonaga4; M.A.F Ferreira1; R.G. Silva4 / 1Federal University of Paraíba (UFPB); 2Marilia University; 4Paulista State University Marília;

Introduction: Since 2015, the International Dysphagia Diet Standardisation Initiative (IDDSI) has published a framework for thickened liquids, which is a practice on Fiberoptic Endoscopic Evaluation of Swallowing (FEES). The aim of this study is to present a proposal on how to prepare thickened liquids for FEES purposes based on IDDSI. Material and Methods: This study was realized in a Pharmacotechnique Laboratory from a Brazilian University Hospital. It was used a modified maize starch (E1442) and maltodextrin based thickener (TH), diet juice powder (JP) of peach flavor, blue dye (BD) and water. TH and JP were measured in grams (g) using an electronic precision balance (AS 220/C/2 model; RADWAG®). BD was fixed in 0.13 mL (four drops). We used the IDDSI recommended syringe test to confirm each level. All measures were repeated for three days by three different researchers. Results: Level 0 = 0.24 g of JP and 4 drops of BD (0.13 mL) mixed with 40 mL of water; syringe residue (SR) = 0 mL; Level 1 = 0.24 g of JP, 4 drops of BD (0.13 mL) and 1.3999 g of TH (5 spoons of 1 mL) mixed with 40 mL of water; SR = 1.6 mL; Level 2 = 0.24 g of JP, 4 drops of BD (0.13 mL) and 1.5869 g of TH (6 spoons of 1 mL) mixed with 40 mL of water; SR = 5 mL; Level 3 = 0.24 g of JP, 4 drops of BD (0.13 mL) and 2.17 g of TH (1 spoon of 5 mL and 3 spoons of 1 mL) mixed with 40 mL of water; SR = 9.2 mL; Level 4 = 0.24 g of JP, 4 drops of BD (0.13 mL) and 2.77 g of TH (2 spoons of 5 mL) mixed with 40 mL of water; SR = 10 mL. Conclusion: It was possible to standardize the thickened liquids for FEES based on the IDDSI with this specific TH. This may contribute to assist the intercenter reproducibility.
06B.04  EFFECT OF BOLUS VOLUME AND CATHETER DIAMETER ON HIGH RESOLUTION MANOMETRY IMPEDANCE RECORDINGS WITH PRESSURE FLOW ANALYSIS IN HEALTHY ADULT VOLUNTEERS

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INTRODUCTION: High resolution Manometry Impedance (HRIM) is a catheter based dysphagia assessment which captures pressure and bolus flow during swallowing. Pressure Flow Analysis (PFA) has been developed to highlight key contractility and distension measures. Catheter diameter is a necessary consideration, as it is known to influence manometry results (1). Bolus volume effects are also established (2). The aims of this study were twofold: to compare PFA metrics acquired by two catheters of different diameter and to observe bolus volume effects on PFA metrics. MATERIALS & METHODS: HRIM recordings were acquired in 10 healthy adults (6M; mean age 28yrs) with an 8 and 10 French catheter, studied sequentially in random order on the same day. Three liquid swallows were acquired for volumes: 2.5, 5, 10, 20 and 30mls. AIMplot software was used to generate PFA contractility and distension metrics, which were averaged per volume for each catheter configuration. RESULTS: A larger diameter catheter produced higher contractility measures of peak pharyngeal pressures (p<0.005) and upper oesophageal sphincter (UOS) post swallow peak pressures (p=0.001). Similarly, pharyngeal intrabolus distension pressures (p=0.009) and UOS pressures during relaxation (p=0.001) were also higher with the larger catheter. Increased bolus volumes lead to elevation of pharyngeal and UOS maximum admittance, a correlate of distension diameter (p=0.001 for both). CONCLUSIONS: PFA pharyngeal and UOS contractility measures and intrabolus distension pressures are significantly altered by catheter diameter but not by bolus volume. Thus, specific normative ranges are essential for interpreting results from HRIM catheters of different diameter. Additionally, larger bolus volumes lead to elevated maximum admittance values indicating a larger pharyngeal and UOS diameter, without a significant increase in intrabolus pressure. This is consistent with sensory modulation of UOS opening to accommodate larger boluses and increased flow rate whilst mitigating flow resistance.

06B.05  THE ASSOCIATION BETWEEN LARYNGEAL SENSORY DEFICITS, ASPIRATION, AND PNEUMONIA IN PATIENTS WITH DYSPHAGIA

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Introduction: It has not been well established if laryngeal sensory deficits are associated with increased risk of aspiration and pneumonia in dysphagic patients. The purpose of this study was to examine if there is a relationship between laryngeal sensory deficits and aspiration or pneumonia in dysphagic patients. Material & Methods: Inpatients at an urban teaching hospital with clinical symptoms of dysphagia were recruited for this study upon referral to the Otolaryngology clinic for a swallowing evaluation from April 2015 through February 2016. Otolaryngologists endoscopically tested laryngeal sensation by touching the arytenoids with the tip of the laryngoscope (the touch method). The patients were then asked to swallow 3-5 mL grape gelatin and 3-5 mL colored water. All procedures were video-recorded. Presence/absence of the laryngeal adductor reflex as a marker of laryngeal sensory function and presence/absence of aspiration were noted by independent raters on the recorded videos. A diagnosis of pneumonia during the entire patient’s hospital stay was determined by a review of the hospital’s electronic medical records. Statistical analyses were performed using Fisher’s exact test. Results: Sixty-one patients were included in this study. Twenty-one patients (34.5%) showed reduced laryngeal sensation. No association was found between reduced laryngeal sensation and aspiration (p = 0.48). There was, however, a significant association between reduced laryngeal sensation and pneumonia development (p < 0.01). Patients with reduced laryngeal sensation had 6.8 times the risk of developing pneumonia as compared to patients with normal laryngeal sensation (OR = 6.75; 95% CI =1.76-25.96) Conclusions: The study showed a clear association between laryngeal sensory deficits as determined by the touch method and occurrence of pneumonia. Sensory testing using the touch method appears to be valuable for predicting pneumonia risk in dysphagic patients.

Table 1: Association between laryngeal sensation and pneumonia

<table>
<thead>
<tr>
<th>Laryngeal sensation</th>
<th>Normal (%)</th>
<th>Reduced (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia Absent (%)</td>
<td>36 (59.0)</td>
<td>12 (10.7)</td>
<td>48 (78.7)</td>
</tr>
<tr>
<td>Present (%)</td>
<td>6 (9.5)</td>
<td>9 (14.8)</td>
<td>13 (21.3)</td>
</tr>
<tr>
<td>Total (%)</td>
<td>42 (63.2)</td>
<td>21 (34.5)</td>
<td>64 (100.0)</td>
</tr>
</tbody>
</table>
are necessary to crush food efficiently and transport the bolus to the onset of the disease in the various oral and masticatory muscles if quantified. Z-scores of the echogenicity were calculated based on reference values, taking into account the influencing factors like height and weight. The z-scores in this study were converted to scores 0-4 (z-scores; <1 = 0; 1-2 = 1; 2-3 = 2; 3-5 = 3; and >5 = 4). Data of the ultrasound measurements of T1 and T2 will be presented per individual (example in figure 1).

Results

The classification was established again. With quantitative muscle ultrasound the echogenicity of oral and masticatory muscles was quantified. Z-scores of the echogenicity were calculated based on reference values, taking into account the influencing factors like height and weight. The z-scores in this study were converted to scores 0-4 (z-scores; <1 = 0; 1-2 = 1; 2-3 = 2; 3-5 = 3; and >5 = 4). Data of the ultrasound measurements of T1 and T2 will be presented per individual (example in figure 1).

Results

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with this study we show the complex influence of DMD on oral and masticatory muscles over time, and the differences between individual patients. This knowledge may help to understand the various problems in mastication and swallowing in patients with DMD.

Figure 1. Data of a 10 year old DMD patient at T1 (LAS) and T2 (ENAS) (3 years later).

068.07 COMPARING PERCEPTUAL METHODS FOR RATING RESIDUE WITH THE NORMALIZED RESIDUE RATIO SCALE

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Introduction Most methods for capturing post-swallow residue rely on perceptual rating and have associated limitations. The Normalized Residue Ratio Scale (NRRS) is an established pixel-based quantitative measure of residue. We compared 3 traditional ordinal methods for perceptually-rating residue with the NRRS. Material & Methods 30 post-swallow VF images were selected from an IRB-approved database of neurogenic dysphagia to include a range of residue severities. Images were randomized to 4 sets of non-identifying codes and separated into 4 spreadsheets for blinded rating using 4 methods: NRRS [1], MBSImP<sup>TM</sup> [2], estimate of percent-filled [3] and undefined subjective severity ratings (mild, moderate, severe etc). All measures were repeated (original rater and second rater) for intra/inter-rater reliability. The results of the 3 perceptual methods were compared with the NRRS on reliability (intraclass correlation coefficients), separation of ordinal scores (inspection of 95% confidence intervals), strength of correlation (Spearman rank) and feasibility (time to complete ratings). Results Reliability results were strongest and most consistent with NRRS (vallecula >0.8, pyriform sinus >0.6). The greatest separation of NRRS across perceptual scores was with the MBSImP for the vallecula and estimation of percent-filled for the pyriforms. All 3 methods were similarly strongly correlated with the NRRS (0.73-0.77). All ordinal rating methods were completed in <1 min/swallow while the NRRS method required 3.5 min/swallow. Conclusions The NRRS is a quantitative method for capturing post-swallow residue. While it takes longer to complete, it yields more consistent reliability scores compared to perceptual methods. All perceptual rating methods captured very similar strength of correlation with the NRRS. The MBSImP method was the most sensitive to subtle changes in vallecular residue while the percent-filled estimation was the most sensitive for pyriform sinus residue.

068.08 INFLAMMATORY FACTORS ASSOCIATED WITH PENETRATION/LARYNGOTRACHEAL ASPIRATION

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Introduction: Respiratory complications and compromised nutrition can contribute to an increase in illnesses, a reduction in the immune response and a poorer prognosis in patients with oropharyngeal dysphagia. Moreover, physiological stress alters the inflammatory response. Material/Methods: To evaluate nutritional status and the inflammatory markers myeloperoxidase (MPO), nitric oxide (NOX) and hs-C-reactive protein (hs-CRP) in patients with laryngeal penetration/laryngotracheal aspiration. A cross-sectional study was conducted involving adults/older submitted to videofluoroscopy with DD (April 2014 to December 2015). The group with laryngeal penetration/laryngotracheal aspiration (PAG) (n = 22) were compared to a control group (CG) (n = 34). Identification of laryngeal penetration/laryngotracheal aspiration (videofluoroscopy), diagnosis of nutritional status (body mass index (BMI)), the food intake (food questionnaire intake), serum analysis of MPO activity, NOX concentration and hs-CRP concentration (colorimetric assays). Univariate and multivariate logistic regression were performed with the different groups using the Wald test. Results: After adjustment for confounding variables (sex, age, BMI, energy, protein intake and comorbidities), the patients had an increased laryngeal penetration/laryngotracheal aspiration with each unit increase in MPO activity (OR: 1.01, 95% CI = 1.00-1.02) and hs-CRP levels (OR: 1.80, 95% CI = 1.07-3.03) in comparison to the control group. Conclusion: Laryngeal penetration/laryngotracheal aspiration were associated with each unit increase in MPO activity and hs-CRP levels. Our results suggest that MPO and hs-CRP might be biochemical predictors laryngotracheal aspiration in selected populations.
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06B.09 OESOPHAGEAL SCREENING DURING VIDEOFLUOROSCOPY: A PROSPECTIVE CLINICAL AUDIT OF CURRENT SLT PRACTICE
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Background: An oesophageal screen (OS) is recommended during video-fluoroscopy (VFS) (Easterling, 2012). A validated OS protocol is the administration of 20mls of liquid barium and a 13mm radio-opaque tablet while the patient stands with or without knees flexed. The bolus is tracked in an anterior-posterior (AP) view from the pharynx into the stomach (Allen et al, 2012; Miles et al, 2015). This study aims (i) to investigate how frequently SLTs complete an OS during adult VFS and (ii) to ascertain if SLTs adhere to a validated OS protocol. Methods: A prospective audit of adult VFS studies was conducted by six postgraduate SLT students in an acute hospital setting over a three month period (Feb-May 2016). Results: Sixty-eight adult VFS studies were audited. An OS was completed in 69% (47/68) of VFS studies. Reasons for not completing an OS were patient compliance or agitation (9%); poor view or positioning (9%); unwell patient (8%) and unknown (6%). All OSs (100%) were conducted in an AP view. Ten percent of OSs (6/68) took place in a standing position while 90% (61/68) of patients remained seated as they could not stand unassisted. The bolus was tracked from pharynx to stomach in 87% (59/68) cases and to the mid oesophagus in 13% (9/68) cases. The OS screening time was twenty seconds in length in 76% (37/47) cases. The bolus administered was 20ml liquid (57%, 27/47), sip liquid (26%, 12/47) or a puree bolus (17%, 8/39). A 13mm barium tablet was administered in 33% of OS (10/30) and it was swallowed with a fluid (6/10) or puree bolus (4/10). Conclusion: An OS is frequently conducted during VFS. SLTs frequently deviate from validated OS protocols as patients are often unable to stand unassisted and they are regularly at risk of aspiration on 20ml thin liquid. The diagnostic accuracy of altered OS protocols is unknown despite a potential increase in radiation exposure. The development and validation of an alternative OS protocol may promote uptake and adherence by SLTs.

06B.10 INVESTIGATING THE USE OF FIBEROPTIC ENDOSCOPIC EVALUATION OF SWALLOWING (FEES) BY SPEECH AND LANGUAGE THERAPISTS (SLTs) IN SWALLOWING ASSESSMENTS ACROSS UNITED KINGDOM, BRAZIL AND REPUBLIC OF IRELAND
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Introduction: Fiberoptic endoscopic evaluation of swallowing (FEES) is used widely as a diagnostically accurate examination of pharyngeal phase dysphagia. Strengths of the FEES procedure include the absence of exposure to radiation, repeatability and portability. However, it is used inconsistently and performed differently in many countries. The aim of this study was to investigate the use of FEES by speech and language therapists (SLTs) across the Republic of Ireland (ROI), the United Kingdom (UK) and the Federative Republic of Brazil. Material & Methods: A 29-item online survey was developed, targeting SLTs based in the three countries working in the area of dysphagia. Different associations, social media links and special interest groups within the three countries promoted the questionnaire, which contained mandatory and voluntary questions. Results: 218 SLTs (31=ROI, 55=UK, 132= Brazil) from a range of clinical settings responded to the survey. There were variations in the responses given by SLTs based in the three countries. Differences include the overall use of FEES, general access to instrumental assessments tools, the role of the SLT in the FEES procedure, consistencies trialled, and rating scales used. Reasons provided universally for not using FEES are availability, lack of training programs and SLTs’ impression of its inadequacy for paediatric population. Respondents expressed an interest in attending FEES training courses. Some respondents based in Brazil added that SLTs are not allowed to pass the laryngoscope under existing current guidelines. Conclusions: The number of respondents was lower than anticipated. Nonetheless, the survey participants expressed an interest in attending FEES training courses. Some respondents based in Brazil added that SLTs are not allowed to pass the laryngoscope under existing current guidelines.

06B.11 ANALYSIS OF BACKGROUND NOISE IN CERVICAL AUSCULTATION SOUND BEFORE/AFTER SWALLOWING
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[Background] Cervical auscultation sound have is useful for the highly detection of aspiration on feeding [1], but not generally used in clinical situation. One reasons is the difficulty in the differentiating between the favorable sound and noises. Aim of this study was to reveal the difference of background noise in cervical auscultation sound among the dysphagic symptoms. [Material & Method] Simultaneous videofluoroscopy (VF), cervical auscultation sound and the check video were applied in 171 patients, 39-96 years of age, with swallowing problems, who visited Vihara Hananosato Hospital, Hiroshima-prefecture, Japan, from September 2013 to June 2015. The cases examined more than one times during this period and were selected the first VF examination. The details of the disease were 75 neuromuscular disease [32 cases of amyotrophic lateral sclerosis (ALS), 29 cases of Parkinson’s disease and others in 14 cases], 52 cerebrovascular accidents, 52 dementia, 11 respiratory diseases and others in 12 cases. The background noise was selected in the cervical auscultation sound before/after swallowing the thickened 3ml liquid including contrast medium. The noise of frequency spectrogram was analyzed using sound analysis software. [Results] Two types of the noise were revealed in High band width spectrogram except for vocal sound. One was near white noise, the other was the signal nail-like in less than about 350 Hz (figure). The signal nail-like was observed, in 17 cases of ALS, 10 cases of cerebrovascular accidents, and 7

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cases of dementia. The frequency of the signal nail-like in ALS had a significantly (p<0.01) different from Parkinson’s disease, cerebrovascular accidents, dementia by chi-square test. [Conclusion] The signal nail-like in less than about 350 Hz in the background noise in cervical auscultation sound, may be specific to findings in ALS.

06B.12 DEVELOPMENT OF THE VIDEENDOSCOPIC EVALUATION OF SALIVA ASPIRATION

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Introduction: Chronic saliva aspiration is a major cause of aspiration pneumonia and increases the risk of pneumonia in dysphagic patients. Therefore, saliva aspiration needs to be accurately evaluated in order to predict the risk of and, in turn, prevent pneumonia. A videoendoscopic evaluation of swallowing, which is performed routinely in clinics, is considered to be the optimal examination for evaluating saliva aspiration. However, it is difficult for endoscopy to detect small amounts of saliva aspiration because saliva is colorless and transparent. Therefore, the aim of this study is to develop the videoendoscopic evaluation of saliva aspiration using edible dye to color saliva. Materials & Methods: Twenty-five dysphagic patients participated in this study. The Penetration-Aspiration Scale (PAS) was adopted as an evaluation criterion. An endoscope was inserted into the nasal passage, the PAS score was measured without dying saliva after three spontaneous saliva swallows, 0.1 g of green edible dye was then placed into the subject’s mouth, and the PAS score was measured again after three spontaneous saliva swallows. Scores were compared using the Wilcoxon signed-rank sum test. Results: PAS scores with and without dying were 5.6±1.4 and 3.7±1.7, respectively. PAS scores with dying were significantly higher than those without dying (p<0.05). Conclusions: These results suggest that the accuracy of the endoscopic detection of saliva penetration and aspiration is improved by using green edible dye. We intend to examine the relationship between the onset of pneumonia and the PAS score of saliva aspiration observed by endoscopy using green dye.

06B.13 OESOPHAGEAL SCREENING DURING VIDEOPULSOPHOSCOPY: CURRENT SLT PRACTICES

Wiesinger¹; M.B. McArdle²; O. Ekberg³; J. Regan / ¹Trinity College Dublin; ²Lund University.

INTRODUCTION Up to one-third of adults with dysphagia have an oesophageal cause (Allen et al., 2012). An oesophageal screen (OS) is now recommended during VFS (Miles et al., 2015). A small number of studies have investigated optimal OES protocols (Allen et al., 2012; Miles et al., 2015). The aims of this study were (i) to examine the prevalence of SLTs performing OS during VFS, (ii) to determine the OS protocol being employed by SLTs and (iii) to investigate the accuracy of SLT analysis of the OS. METHODS A descriptive, cross-sectional study design was used. Over a 4-week period SLTs working in the USA, UK, ROI, NZ, Australia and Austria completed a 15-minute online survey, which included six OS videos. The videos were independently rated by an experienced radiologist specializing in dysphagia. Survey responses were analyzed descriptively. SLT’s ratings of OS videos were compared to expert ratings. RESULTS OF 333 SLTs, 60% completed the survey. Fifty-eight percent (n=174) of SLTs performing VFS protocol. Only 25% of SLTs report using a defined OS protocol. The majority of SLTs perform OS in an anterior-posterior view (55%) (Fig. 1). Major differences exist in bolus volumes and consistencies being administered. Based on six OS cases, the majority of SLTs accurately evaluated oesophageal clearance (95%), transit time (90%) and the oesophageal phase as being normal or abnormal (90%) compared to the expert rating. Two-thirds of SLTs were able to locate residue (67%) and over half of SLTs could identify oesophageal pathology correctly (55%). SLT’s overall ability to evaluate the oesophageal phase compared to the expert rating was 80% (Fig. 2). CONCLUSIONS The OS is not being conducted routinely during VFS by SLTs. When completed, OS protocols vary markedly and are often not based on validated screens. International evidence based guidelines need to be developed and training provided to promote the SLT role in the performance and analysis of OS.

06B.14 DEVELOPMENT OF A NEW OBJECTIVE MEASUREMENT DEVICE TO EVALUATE HYOLARYNGEAL EXCURSION DURING SWALLOWING AT THE BEDSIDE

R. Byrne¹; N. Sivan²; F. Duignan³; D. Berry¹; J. Regan / ¹Dublin Institute of Technology; ²Trinity College Dublin.

Introduction: Evaluation of hyo-laryngeal excursion (HLE) during swal-
lowing is challenging during clinical swallow evaluations (CSE). Study aims to (i) determine if a HLE measurement device would be of benefit to dysphagia clinicians; (ii) design a prototype HLE measurement device; (iii) establish if a prototype device can provide HLE measures during swallowing and (iv) test device on comfort/acceptability.

**Materials and Methods:** A 10 minute online survey was distributed to SLTs across nine countries. Based on survey responses, the researchers developed a prototype accelerometry and gyrometry measurement device. During pilot tests completed on 5 healthy young adults (4 females; age range 20-30 years), two sensors were placed on the anterior and lateral neck (Figure 1a). Participants were instructed to complete twelve swallows (dry, 5ml, 10ml, 20ml liquid x 3) in randomised order. Anterior and superior displacement (mm) and the duration of HLE (secs) were acquired during sixty swallows. Participants rated comfort and acceptability of the device on a 5 point Likert scale. Data was analysed descriptively.

**Results:** 135 dysphagia trained SLT respondents of the survey met inclusion criteria. Sixty-five percent (n=68) of SLTs selected HLE as the aspect of swallowing that would benefit most from a portable measurement device at the bedside. HLE was least accurately and reliably evaluated during CSE, according to respondents (Figure 2). Mean anterior and superior displacement and the duration of HLE across bolus volumes from accelerometry (displacement) and gyrometry (angle), are depicted in Figure 1b. Prototype comfort and acceptability scores were positive. Conclusion: A HLE device would be of benefit during the CSE. Accelerometry measures from the prototype did not correlate with published HLE data. Gyrometry trajectory measures were more reliable and had less sources of error. Further research is ongoing.

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068.15 CLINICIAN ACCURACY IN IDENTIFYING SWALLOWING PATHOPHYSIOLOGIES
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**Introduction:** SLPs report that they are the primary providers of dysphagia management, however this role has been harshly attacked with some assertions that SLPs are inadequately trained in swallowing physiology (Campbell-Taylor, 2008). This apparent lack of knowledge has not been directly examined in practicing SLPs, however we consider the complexity of swallowing and limited training in swallowing physiology to be significant contributors to this dilemma. We conducted an international survey to examine how clinician demographics and swallowing complexity impact accuracy when identifying swallowing pathophysiologies in videofluoroscopic images. **Methods:** The survey included 3 videofluoroscopic swallows that ranged in complexity (easy, moderate complex). For each swallow, objective swallowing kinematics were measured and compared to published normative data (Molfenter, 2012). Primary disorders were defined as events that caused or increased aspiration risk. Clinicians who practice dysphagia management (avg 9.76 yrs) completed the survey on a web-based format (Qualtrics) without time limits and with frame-by-frame viewing capabilities. **Results:** The primary disorder was identified with the following accuracy rates: easy 67%, moderate 6%, complex 6%. On average, clinicians mislabeled >8 additional normal swallowing events as impaired. Accuracy rates were higher than average among clinicians who report performing >5 VFSS studies/ week and use frame-by-frame analysis >80% of the time. Accuracy rates were lower than average among clinicians who have limited access to videofluoroscopy and report never using frame-by-frame analysis (i.e. clinicians working in home health, skilled nursing facilities, and/or practice outside of the USA). Conclusions: Poor to modest accuracy of disorders and frequent false positives suggest that additional training in both normal and disordered swallowing is needed to increase accurate dysphagia diagnosis among practicing clinicians.

068.16 PRECISION MATCHING OF THE FLOW PROPERTIES OF BARIUM AND NON-BARIUM STIMULI
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**Introduction:** In order to visualize boluses under videofluoroscopy, radio-opaque contrast media are required. Barium sulfate suspensions or powders are commonly used for this purpose. However, the addition of barium powder to a liquid is known to alter viscosity. Recipes are therefore needed to achieve a close match in the flow characteristics of barium stimuli to the dietary liquids they are intended to represent. We will describe a process used to confirm similar flow properties between barium and non-barium stimuli. **Materials & Methods:** In 2015, the
Introduction Treacher Collins syndrome (TCS) is a rare congenital disorder of craniofacial development affecting 1 in 50 000 live births<sup>1</sup>–<sup>3</sup>. Clinical features affect the mid and lower face. Infants may receive tracheostomy tube for severe mandibular hypoplasia and narrowed airways. Reconstructions of soft and hard tissue to repair defects of the orbit, zygomatic complex, and mandible are reported<sup>1</sup>–<sup>3</sup>. Patients often experience mastication and swallowing problems<sup>1</sup>–<sup>3</sup>. The aim of this study was to describe the experienced mastication and swallowing problems and related ultrasound images of the oral muscles in 3 patients with TCS to explain the underlying disturbed physiological mechanisms.

Material & Methods All 3 patients were evaluated with a clinical feeding and swallowing assessment by the speech language therapist and ultrasound images of oromandibular muscles were made. The images were analyzed on thickness and echogenicity and compared with normal values. Patient 1 (0; 11 years) and patient 2 (6; 06 years) were known with a tracheostomy tube. Patient 3 (19; 0 years) also underwent a videofluoroscopic swallow study (VFSS) because of swallowing problems. They were all totally oral fed. Results All patients experienced mastication problems, prolonged meal times and dysphagia especially with (semi)solid food. The VFSS of patient 3 revealed post swallow residue on solid food. All patients had z-scores of < -2 on thickness, and z-scores > +2 on the echogenicity of the digastic, masseter and tongue muscles (examples of patient 3 in fig. 1). Conclusions Mastication and swallowing problems in TCS are not only ensued from deviated facial bone structures, but are also due to hypoplastic muscles with increased echogenicity, which is related to muscle weakness. In recommendations these deviances must be taken into account. Fig 1. Digastic muscles (a) and masseter muscle (b), upper part healthy person, lower part patient 3, with high echogenicity and small thickness (hypoplastic).

**06C.01 MASTICATION PROBLEMS AND DYSPHAGIA IN 3 PATIENTS WITH TREACHER COLLINS SYNDROME DUE TO AFFECTED OROFACIAL MUSCLES**

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International Dysphagia Diet Standardisation Initiative (www.iddsi.org) released a new method for classifying liquid thickness based on gravity flow. We used the IDDSI syringe flow test to measure the stability of liquid flow for 20% w/v barium stimuli prepared in thin, slightly-, mildly-, moderately- and extremely-thick consistencies. Both starch and xanthan gum thickeners were included. Repeat flow tests were performed over a 6-hour time frame following mixing. Once the confidence intervals of flow for these stimuli were established, matching recipes for an array of thin to extremely-thick lemon-flavored water stimuli were prepared and tested. Results: Acceptable levels of variation in flow results were achieved over time for all stimuli. However, different amounts of thickener were required for preparing the barium array compared to the non-barium array. Furthermore, different amounts of thickener were required when using starch versus xanthan-gum thickeners. Greater variation in flow was observed over time and temperature for the starch-thickened stimuli. Conclusions: The IDDSI Syringe Flow Test was useful for illustrating variations in flow across liquids that are presumed to have similar flow properties, and for guiding the development of recipes to ensure closer similarity in flow between barium and non-barium liquids.

**06B.17 WIRELESS INTRA-ORAL MEASUREMENT OF DYNAMIC TONGUE PRESSURES: A CLINICAL UTILITY PILOT STUDY**

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Introduction: HeadSense’ (formerly ‘OroPress’) is a novel, wireless device which measures intra-oral swallowing pressures. It records both positive and negative pressures through a biomedical interface pressure transducer (BIPT) affixed to the alveolar ridge and has a temperature sensor to improve comfort and acceptability. Regarding feasibility, the device was found to be quick and easy to use. The temperature sensor provided additional information on the timings of swallow onset and offset. Some participants demonstrated swallows with significant negative pressure peaks, a feature not widely reported in the existing literature. Conclusions: The ‘HeadSense’ device is an acceptable means of measuring intra-oral pressures during swallowing tasks with minimal burden. The use of a temperature sensor facilitates data extraction and interpretation, while negative pressure measurements provide additional insight into swallowing function. Data collection is currently underway with five untreated lung cancer patients for comparison.
06C.02  DEGLUTITION DISORDERS IN CEREBRAL PALSY WITH INDICATION FOR GASTROTOSMY

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Introduction: Cerebral palsy refers to a group of disorders in the posture and motor control development, occurring as result of a non-progressive lesion of the developing central nervous system. Deglutition disorders, oropharyngeal dysphagia, are a very common symptom in this population. The aim of this study was to describe the oral transit time of deglutition in cerebral palsy in individuals with indication for gastrostomy. Materials and Methods: A cross-sectional clinical study, included 15 individuals with cerebral palsy and indication for gastrostomy. 10 males and 5 females, 13 with oral feeding and 2 with nasal probe, age range 1 until 14 years old, that were followed in two Research Dysphagia Centers in Brazil. The swallowing was analyzed by videofluoroscopic swallowing study. It was considered normal oral transit time of deglutition until 3 seconds. It was analyzed 19 images from oral transit time of deglutition, by a specific software, using puree bolus (13 images) and liquid bolus (6 images). Results: The media and standard deviation for oral transit time of deglutition were 10,75 seconds (media) and 11,76 (SD) to puree and 4,22 seconds (media) and 1,54 (SD) to liquid. Conclusion: These results demonstrated that oral transit time of deglutition in children with cerebral palsy with indication for gastrostomy is raised.

06C.03  VIDEOFUOROSCOPIE FINDINGS IN CHILDREN WITH OROPHARYNGEAL DYSPHAGIA WITHOUT APPARENT RISK FACTORS AND WITH CHRONIC RESPIRATORY SYMPTOMS

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Introduction: Efficient and safe oral feeding in neonates and infants requires tuned coordination of sucking, swallowing, and breathing – a coordinated activity that is guaranteed by the integration in the central nervous system. When this integration does not occur in an appropriate manner, oropharyngeal dysphagia may be present. Recent studies have demonstrated the occurrence of dysphagia in babies and children without apparent risk factors for this disorder who present with recurrent respiratory symptoms without an identifiable cause. Pathophysiological findings on videofluoroscopic in this population include delayed pharyngeal swallow onset, laryngeal penetration, and bronchopulmonary aspiration. Material & Methods: Videofluoroscopic swallowing studies (VFSSs) of 61 pediatric patients with recurrent respiratory symptoms without an identifiable cause performed in the radiology department between August 2009 and January 2011 were retrospectively reviewed. VFSSs were analyzed for dysphagia, laryngeal penetration, and bronchopulmonary aspiration. All VFSSs were performed using liquids. The chi-square test or Fisher’s exact test was used to test an association between categorical variables and study groups. The level of significance was set at 5% (P < 0.05). Results: Of 61 patients, 53 (86.9%) were diagnosed with oropharyngeal dysphagia. Of these, 16 (30.2%) had a delay in pharyngeal phase initiation (trigger), 24 (45.3%) had laryngeal penetration, 4 (7.5%) had bronchopulmonary aspiration, and 9 (17.0%) had both laryngeal penetration and bronchopulmonary aspiration. Among infants (29 days -24 months of age; n = 53), 92.5% had dysphagia. Of these, 95.2% had an early diagnosis (29 days and 12 months of age). Conclusions: These findings indicate a high rate of oropharyngeal dysphagia in children without apparent risk factors for this disorder and a correlation between dysphagia and chronic respiratory symptoms without an identifiable cause, making it necessary to include dysphagia in the differential diagnosis of these patients. Despite of the important findings, the present study has some limitations and indicates the necessity of prospective studies.

06C.04  EPIDEMIOLOGICAL PROFILE OF CHILDREN SEEN AT THE VIDEOFUOROSCOPY OF SWALLOWING SERVICE AT A PUBLIC HOSPITAL

P.B. Diniz; T.B. Goetze; L.B. Sá Carneiro; A.C. Battezini; L.V. Targa / 1Hospital Materno Infantil Presidente Vargas; 2Clinical speech-language pathologist

Introduction: Swallowing it’s a complex motor action that consist in the effective food conduction from mouth to stomach through phases that interrelate, any difficulty in one of those it’s called dysphagia. Prevalence of feeding disorders in pediatric population it’s estimated 25% to 45% in children with typically normal development and of 33% to 80% in children with developmental disorders. In the pediatric population, dysphagia increases the risk for chronic pulmonary diseases induced by aspiration, malnutrition, developmental problems, stressful interactions between the child and the feeder. This study aims to describe the epidemiological profile of the pediatric population submitted to videofluoroscopic exam in a public hospital. Materials and Methods: Retrospective study that investigated the videofluoroscopic findings of 56 children from August to December of 2009. The consistencies used: thin, nectar, honey, pudding and solid, were managed according to age, feeding habits and therapeutic indications. Results: The average age was one year old and six months (age range 28 days -12 years old). Main feeding route was oral 46(82%). According to the etiology, 20(35%) didn’t present risk factors to dysphagia, 14(25%) presented Cerebral Paralysis, 10(17%) prematurity and 8(14%) exposed to illicit drugs during the gestational period; all others 4(7%) children with Down syndrome and other etologies. Regarding the results, 32(57%) were diagnosed with dysphagia, of these 15(44%) presented laryngeal penetration and 17(53%) bronchopulmonary aspiration. Conclusion: This study shows high prevalence of oropharyngeal dysphagia in this population, including pointing the occurrence in groups without risk factors for dysphagia and with respiratory problems, and exposed to crack. This data becomes relevant as far as early identification and
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06C.05 PRELIMINARY VIDEOFLUOROSCOPIC FINDINGS OF DEGLUTITION IN A PEDIATRIC POPULATION EXPOSED TO ILICIT DRUGS DURING THE GESTATIONAL PERIOD

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Introduction: Efficient and safe oral feeding requires coordination of sucking, swallowing, breathing—guaranteed by the integration of the central nervous system. When this integration does not occur appropriately, oropharyngeal dysphagia may be present. Studies emphasize potential effects in the neurodevelopment, behavior and learning of exposed infants to illicit drugs during the gestational period. In addition, they refer to problems in coordination and hypertonia. The aim is to describe videofluoroscopic findings of deglutition in this population. Material & Methods: Retrospectively analyzed 30 videofluoroscopic studies of infants and children exposed to illicit drugs during the gestational period performed from August 2009 to January 2011 in a public hospital in Porto Alegre, Brazil. The inclusion criteria were presence of chronic respiratory symptoms, and exclusion of patients with a disorder that could possibly be dysphagia or affect swallowing. Results: Thirty patients were included in the study, 19 male and 11 female. The median age was 166 days (age range, 94-276 days). Twenty-nine patients were exposed to crack cocaine, 18 (60%) to cocaine, and 7 (23.3%) to cannabis. Nineteen (63%) patients were diagnosed with oropharyngeal dysphagia. Of these, 19 (100%) presented laryngeal penetration and 10 (52%) presented bronchopulmonary aspiration. Conclusion: The data found indicates prevalence of oropharyngeal dysphagia in the population studied. This data points the importance to consider oropharyngeal dysphagia as one of the possible etiologies for respiratory problems in exposed infants. Despite of the important findings, the present study has limitations: it’s a retrospective study, control group is absent, a small sample and varied age group. This study indicates the necessity of prospective studies with this population, although it becomes relevant in a way that alert the health work team as for the possibility of dysphagia in a group still understudy.

06C.06 RELATIONSHIP BETWEEN THE EATING AND DRINKING ABILITY CLASSIFICATION SYSTEM AND SWALLOWING PROBLEMS IN PATIENTS WITH CEREBRAL PALSY

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Introduction: The Eating and Drinking Ability Classification System (EDACS) is used to classify how children with cerebral palsy (CP) eat and drink in everyday life using distinctions. The distinctions between the different levels in the EDACS are based upon functional ability, the need for adaptations to the texture of food and drink, the techniques used and some other features of the environment. The aim of this study was to show the relationship between EDACS scores and the findings from Videofluoroscopic Swallowing Study (VFSS) in CP. Material & Methods: Sixty-seven patients (mean age=4.11±3.35 years) which have complaints about swallowing problems were included. EDACS was used to describe eating and drinking levels of ability. Oropharyngeal swallowing physiology was examined with VFSS. Penetration aspiration score (PAS) was used to determine the penetration aspiration severity. The Pediatric version of EAT-10 (PEDI-EAT-10) was also filled by caregivers. Results: No correlation was found between EDACS and oral dysfunction and delay in swallowing reflex (p1:0,930, r1:0,112; p2:0.214, r2:0,143). Positive weak correlation was detected between EDACS and PAS liquid and PAS viscous (p3:0,005, r3:0,351; p4: 0,022, r4:0,294). There was positive weak correlation between EDACS and PEDI-EAT-10 (p5:0,022, r5:0,321). Conclusions: We concluded that EDACS may be used to predict the presence of pharyngeal phase problems particularly penetration and aspiration in CP.

06C.07 CHARACTERISTICS OF SWALLOWING PROBLEMS IN CHILDREN WITH DOWN SYNDROME

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Introduction: Feeding and swallowing can be challenging for children with Down Syndrome (DS) and a source of stress for both children and caregivers. It is necessary to define the swallowing problems in this patient population to increase the awareness of both clinicians and caregivers. The aim of the study was to present the characteristics of swallowing problems in children with DS who had feeding and swallowing complaints. Subjects & Methods: Fifty-four children with DS (35 male, 19 female, mean age: 3,29±2,88 years) were included in the study. The clinical oral structure evaluation was performed. The presence of drooling and chewing problems was noted as present and absent in terms of functional oral evaluation. The Videofluoroscopic Swallowing Study (VFSS) was performed if necessary according to clinical evaluation. The patients were required to take 3 ml liquid and pudding barium food consistencies during VFSS. Results: Delayed teeth eruption in 18 (33%), open bite in 12 (22%), tongue thrust in 17 (31%), and high arched palate in 17 (31%) children were identified in clinical oral structure evaluation. Drooling in 3 (5%) and chewing problems in 18 (33%) children were determined. VFSS was required in 33 children. Oral phase problems in 9 (17%), nasal regurgitation in 3 (6%), residue after swallowing in 2 (4%), delayed swallowing reflex in 10 (19%) and esophageal motility problem in 7 (13%) children have been found in VFSS. Liquid food aspiration in 15 (28%) and viscous food aspiration in 2 (4%) children were detected. Conclusions: It was concluded that chil-
The effects of oral motor disorders include alterations in the muscles, functions, posture, bone and occlusion of children. Mouth breathing, tongue thrust, macroglossia, open mouth, abnormal lip posture are often related to oral motor disorders in cerebral palsied children. However, children without CP can also be affected. The purpose of this study was to evaluate oral motor functions in children with CP and without CP comparatively and to correlate oral findings in two groups. Material & Method: A total of 103 children, with swallowing disorders (53 cerebral palsied, 50 non cerebral palsied) and aged 2-6 years participated in the study. The children’s oral motor functions including swallowing, chewing and eating functions, drooling were evaluated by using Oreland scale at the beginning of the study. Mouth breathing, tongue thrust, macroglossia, lip closure, tongue posture were examined intraorally. Data were analyzed by SPSS statistical software, version 20.0. The x² and t test analysis was used to examine the association between orofacial functions of children with CP and without CP and the 95% confidence intervals were expressed. Results: As a result of comparison between the two groups; a significant difference was determined in terms of chewing and swallowing function, drooling frequency and severity, mouth breathing lip closure macroglossia, tongue thrust and tongue position (p< 0.05). Reverse relation was determined between lip closure and drooling frequency (p=0.000), severity (p=0.000). Conclusions: The results of this study indicate that cerebral palsied children with swallowing disorders have increased orofacial disorders than children without CP. Early diagnosis and treatment of swallowing disorder is important to improve the life quality in cerebral palsied children. To achieve this, early diagnosis and treatment should involve multidisciplinary approach including dentists.
transplanted children were interviewed (16 liver and 15 kidney) and 11
quality-quantitative method through a questionnaire addressed to par-
yet. Materials and methods: The research has been carried out with a
diagnosis and therapy in this field and the management is not standard
for a transplant since there are no currently ready-made procedures for
transplanted children. This study also focuses on children still waiting
changes concerning the abilities as regards nutrition in liver or kidney
of the speech therapist in the management of swallowing and in the
a rarely dealt with topic in literature. This research investigates the role
Introduction: Pediatric dysphagia in solid organ transplanted children is
LUCENCE AND RISK FACTORS
BEHAVIOURAL EATING DISORDERS: A PREVIOUS ANALISY OF PREVA-
SPEECH THERAPY CARE OF SOLID ORGAN TRANSPLANTED CHILDREN
BEHAVIOURAL EATING DISORDERS: A PREVIOUS ANALISY OF PREVA-
LENCE AND RISK FACTORS
E. Grosso1; E. Masera1; E. Favero2; R. Albera1 / 1A.O.U. Città della Sa-
Height and weight were measured at the time of the interview. Nutri-
tional intake was calculated using the energy data sheet. The
intake and weight gain were statistically significant in group I
children (mean age=43.08±18.44 months, 49.4% male) were included.
30 month and 6 years old, who live in Turin and the surrounding district.
METHOD: This is a pilot study. It consists a questionnaire divided in two
parts: the first part investigates the risk factors of picky eaters disorder
and its significant correlation with phonological disorders or a tongue
thrust swallowing, the second part is a translation of the Behavioural
Pediatrics Feeding Assessment Scale into Italian. The questionnaire will
be distributed to Primary School and pediatricians. CONCLUSION: The
study will be completed in July 2016. The study will contain data about
prevalence and risk factors of feeding disorders. The study will be a
first step towards future studies investigating the prevalence of feeding
disorders in the Italian population and to formulate a tool for their
detection.
06C.11 QUALITY-QUANTITATIVE ANALYSIS IN THE PHONIATRIC
SPEECH THERAPY CARE OF SOLID ORGAN TRANSPLANTED CHILDREN
BEHAVIOURAL EATING DISORDERS: A PREVIOUS ANALISY OF PREVA-
LENCE AND RISK FACTORS
E. Grosso1; E. Masera1; E. Favero2; R. Albera1 / 1A.O.U. Città della Sa-
lute e della Scienza di Torino; 2ASL TO1-ASL TO4, Torino
Introduction: Pediatric dysphagia in solid organ transplanted children is
a rarely dealt with topic in literature. This research investigates the role
of the speech therapist in the management of swallowing and in the
changes concerning the abilities as regards nutrition in liver or kidney
transplanted children. This study also focuses on children still waiting
for a transplant since there are no currently ready-made procedures for
diagnosis and therapy in this field and the management is not standard
yet. Materials and methods: The research has been carried out with a
quality-quantitative method through a questionnaire addressed to par-
ents which is based on a phenomenological approach. 31 solid organ
transplanted children were interviewed (16 liver and 15 kidney) and 11
children still on a waiting list for the transplant (9 kidney and 2 liver)
at A.O.U. Città-àcute- della scienza e della salute di Torino. Results
and conclusions: The study is still in progress and will be finished
within September 2016. The aim of this research is the management of
swallowing in solid organ transplanted children which will be able to
highlight any criticality and needs in order to build an appropriate plan
to follow solid organ transplanted children from the point of view of the
phoniatrist and speech therapist.

06C.12 INVESTIGATION OF GROWTH, DIETARY INTAKES AND FEEDING
BEHAVIORS OF CHILDREN WITH CEREBRAL PALSY WHO HAVE CHewing
DISORDERS
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and rehabilitation
Introduction: We investigated growth, dietary intakes and feeding
behaviors of children with cerebral palsy (CP) who have chewing dis-
orders. Material & Methods: This cross-sectional study included two
groups. Group I (study group) (n=50) included CP children with chewing
disorders and group II (control group) (n=35) included healthy children
without chewing disorders. Z-scores of the nutritional indicators were
calculated. The dietary assessment was performed by using the 24-
hour recall method. The Behavioral Pediatrics Feeding Assessment
Scale (BPFA) was used to assess both frequencies of negative feeding
behaviors and parents’ problematic perceptions. Results: Eighty-five
children (mean age=43.08±18.44 months, 49.4% male) were included.
The mean weight- (p=0.002) and height- (p=0.011) for age z-scores of
group I were lower than group II. Daily calorie and fat intakes were
lower (p=0.038, p=0.011; respectively) whereas water from foods and
calcium intakes were higher in group I than group II. (p=0.001, p=0.001;
respectively). A statistically significant difference was found between
groups in favor of group II in all subscales of BPFA (p=0.001). Conclu-
sions: These results showed that CP children with chewing disorders
are unable to complete their nutritional needs from liquid and semisol-id foods and they had poor growth, feeding behaviors and their parents
had higher problematic perceptions. Thus, chewing evaluation should
be performed in children with poor growth, insufficient dietary intake
and problematic feeding behavior.

06C.13 GUIDELINES FOR INITIATING ORAL FEEDING IN THE NICU: ARE
THERE ANY?
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Southeastern University
Introduction: Advances in medicine and medical technology has result-
ed in an increased survival of premature infants. As a result, preterm
infants spend many weeks in the NICU as they continue to grow closer
to term age. Discharge from the NICU commonly requires the neonate
to demonstrate successful oral feeding, which leads to questioning
when and how to introduce oral feeding. Currently there is no formal
protocol and feeding practices vary by institution.Methods & Materials:
A literature review was conducted which included studies of quantita-
tive, qualitative, and mixed quantitative-qualitative designs. Studies re-
viewed investigated oral feeding in preterm infants, including areas of
feeding development, attaining full oral feeding, feeding performance,
infant-drive, cue-based feeding, and feeding readiness.Results: Cur-
rent literature suggests that initiation of oral feeding as early as 31 to
34 weeks postmenstrual age allows for more practice, improved oral
motor skills, and earlier coordination of suck-swallow breathe pattern
resulting earlier attainment of exclusive oral feeding and shorter hos-
hpitalization. However, many of these studies excluded preterm infants
with medical comorbidities, which are typically seen in the NICU setting
causing concern regarding generalization of these results to the general
NICU population. Conclusions: Given the inconsistent reports as to
when and how to appropriate initiate oral feeding, it is of no surprise
that formal guidelines have not been established across all institutions. During this presentation, the current research findings on initiating oral feeding in preterm infants will be presented. To integrate research and clinical experience, the clinician’s will discuss their opinions on appropriate guidelines, with audience input and discussion encouraged.

06C.14 A PERSONALIZED FEEDING APPROACH BASED ON OBJECTIVE MEASUREMENTS OF THE COORDINATION OF SUCKING, SWALLOWING AND BREATHING: A CASE STUDY

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Introduction Safe and efficient feeding of sick neonates may be complex and the intervention can be a heterogeneous challenge. The careful identification of neonatal feeding problems leads to a personalized pathophysiology based feeding approach resulting in better feeding outcomes. The aim of this case study is to show the utility of objective measuring of sucking, swallowing and breathing leading to an optimal personalized feeding approach. Methods We describe a preterm born infant (31 weeks PMA) with neonatal meningitis and reflux. At the age of 46 weeks parents reported increasing feeding problems, side-lying. Because of severe fatigue, the amount of formula for each oral feeding was gradually increased. After 9 weeks the infant had a normal sucking pattern while drinking efficiently and safely 70 ml formula with a “slow-flow” nipple (fig.1c). Conclusion The use of objective measurements of the coordination of sucking, swallowing and breathing in complex neonatal feeding disorders results in the identification of the pathophysiology, which is basic for an optimal personalized feeding approach. Fig. 1 Combined registration with the DSW (parents gave written consent to use the photo’s)

06C.15 ALTERATIONS IN HYPOLARYNGEAL ELEVATION AFTER ESOPHAGEAL ANASTOMOSIS: A POSSIBLE MECHANISM FOR AIRWAY ASPIRATION

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Introduction: Tensioned esophageal anastomosis (EAN) may alter anatomical relation of airway and upper esophagus in children and may be attributed to airway problems. To evaluate hypolaryngeal elevation (HE) after EAN in children with esophageal atresia–tracheoesophageal fistula (EA-TEF). Materials and methods: Patients operated for EA-TEF were evaluated for age, sex, type of atresia, time to EAN. Videoflo-roscopic (VFS) evaluations were performed by the same deglutitionist who was blind to the study. Penetration-aspiration scale (PAS), distance between upper esophageal sphincter and 2nd cervical vertebrae (UES-C²) and HE were evaluated. The results of EA-TEF patients were compared with healthy children. Results: Eighteen patients with EA-TEF and 10 healthy controls were included. The median age was 16 months (12-36) in EA-TEF and 18 months (13-51) in controls. Male to female ratio was 5:4 and 4:1 respectively. 66.7% of cases were isolated-EA, 5.6% of them were EA-proximal TEF and 27.8% of them were EA-distal TEF. Half of the cases had primary EAN and others underwent delayed esophageal repair. Early oral feeding was also started in 9 patients (50%) whereas others had delayed oral feeding. VFS showed aspiration in 10 cases (55%) and PAS were higher than 7 in 5 cases (27.7%). The median distance between UES-C² was 3.04 cm (2.17-3.94) in EA and 4.17 cm (3.45-6.24 cm) in controls. Median distance for HE was 0.37 (0.18-1.1) in EA and 1.15 (0.61-1.06 cm) in CG. When measurements of UES-C² and HE compared with healthy controls, distance between UES-C² is significantly lower than CG (p<0.05) and HE is decreased in EA-TEF patients. Conclusion: In conclusion, children with EA-TEF had shortened distance between airway and upper esophagus. Also, HE is inefficient to protect airway during deglutition. Anatomical alterations after EAN may suggest that airway problems may be related with HE.

06C.16 DETERMINING ORAL READINESS IN PREMATURE INFANTS

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Introduction: Determining oral feeding readiness in preterm infants is difficult and involves many aspects, including observations of behavioural state, physiological responses to the environment, oral skills and motor skills (McGrath & Medoff - Cooper, 2002). Premature infants are challenged when developing the skills needed for effective oral feeding due to an immature neurological system, underdeveloped motor skills and poor autonomic regulation (Amaizu et al, 2008). Because of an
infant’s complex needs and immature development, recognizing oral readiness signs alongside other important indicators when planning the introduction of oral feeding can be hard to gauge accurately (Pickler & Frankel, 1995). Material & Methods: This presentation focuses on results from a cross sectional questionnaire in two neonatal units, one a level 1 unit, and the other a level 2 unit. Results: Participants were asked questions about knowledge of specific protocols related to oral readiness; how they themselves determine oral readiness; amount of nutrition mls/kg/day via tube pre an oral trial; the importance of other factors in the development of oral readiness, e.g. weight, motor skills, non-nutritive sucking; involving parents. Conclusions: Data are currently being collected from both neonatal units to enable the team to plan more effective introduction of oral feeding for premature infants.

06C.17 THE RELATIONSHIP BETWEEN SPONTANEOUS SWALLOW FREQUENCY, DYSPHAGIA AND SALIVA CONTROL IN CHILDREN WITH AND WITHOUT CEREBRAL PALSY

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Introduction: Dysphagia and drooling are common in children with cerebral palsy (CP). This study investigated the link between spontaneous swallow frequency (SSF) and dysphagia and drooling in children with and without CP. Results: SSF of children with CP is lower than in healthy children (CP median=0.53 [0.40]; controls median=1.065 [0.61] sw/min, p-value=0.001). In children with CP, SSF correlated significantly with dysphagia (r=-0.357; p=0.046). Dysphagia correlated with saliva control in rest (r=0.494; p=0.01) and with saliva control during activity (r=0.415; p=0.026). A statistical trend was seen between SSF and saliva control in rest (r=0.423; p=0.058) in children with CP. Gross Motor Function Classification System score correlated with severity of dysphagia (r=0.445; p=0.028) and with saliva control in rest (r=0.417; p=0.029) but not with SSF. Saliva control of children with CP did not differ in rest versus activity. Conclusions: This study shows that children with CP swallow less frequently than healthy children. Spontaneous swallow frequency of children with CP correlates with dysphagia but only limited with saliva control. Our data support that assessment of SSF may have potential as a clinical screening tool in pediatric dysphagia.

06C.18 ORAL-MOTOR AND FEEDING PATTERNS IN CHILDREN WITH DOWN SYNDROME: AN EPIDEMIOLOGY STUDY

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Introduction: This study examined the nature and characteristics of oral-motor and feeding difficulties in children with Down syndrome (DS) using a quantitative design and multi-method assessment protocol. The methods were tested with a small cohort to inform a further large-scale epidemiology study. Methods: Eleven children with DS met the inclusion criteria (age range: 13 to 62 months; M: 44.55; SD: 17.88; Male: 7; Female: 4). Data was collected using 3 methods. A clinical feeding assessment was carried out to identify patterns of feeding difficulties. The Schedule for Oral Motor Assessment (SOMA; Reilly et al, 2000) was used to analyse oral-motor patterns. A Caregiver Questionnaire was also completed. Results: Feeding difficulties for all children were most marked at the oral phase. Oral-motor deficits included reduced range and movement of the lip and tongue and, to a lesser degree, the jaw. Delayed texture progression and texture selectivity were present. Preference for straw-dinking was evident, while 40% of participants used open-cup drinking. Specific drinking patterns included difficulty achieving lip seal, reduced tongue movement, and use of weak or inefficient sucking patterns while drinking. Though specific difficulties involving tongue, lip and jaw movements were observed, none met the SOMA threshold for oral-motor dysfunction on the textures assessed and its suitability for a further study is queried. Conclusions: Children with DS presented with specific oral-motor difficulties that impact feeding development and efficiency. These findings complement previous research and provide direction on the clinical utility of assessments for a further epidemiology study.
Abstract Book

Evoked potentials (MEPs) of the corresponding muscles that are controlled by that motor area can be elicited. The MEPs can reflect the intactness of the neurological connections from the cortex to the muscles. To date, there is no database in the literature for comparison of MEPs of the tongue between young and old healthy adults, and between healthy and dysphagic individuals. The current study investigates the differences in peak-to-peak amplitudes of tongue MEPs between healthy young and old adults, as well as those in chronic post-stroke dysphagic individuals. The feasibility of using MEPs as a tool for monitoring neurological changes after neuromodulation is discussed. Materials and Methods: 28 healthy adults and 10 individuals with chronic post-stroke dysphagia were recruited in the study. Participants were classified into 3 groups, younger healthy (mean age=22.7 years, N=13), older healthy (mean age=55.8 years, N=15) and post-stroke dysphagic (mean age=62 years, N=15) group. Single pulses of TMS were applied over the tongue area of the motor cortex to elicit motor evoked potentials (MEPs) from the tongue. Results: There is no significant differences in tongue MEPs between younger and older healthy groups (p=0.570). However, the post-stroke dysphagic group has significantly lower MEPs than the younger and older healthy groups (p=0.007 and p=0.002). Conclusions: This study suggested that adults with functionally healthy tongue and no swallowing problems have similar tongue MEPs. However, dysphagic individuals have significantly lower tongue MEPs than healthy adults. Using TMS to elicit tongue MEPs is a feasible tool for tracking the effects of neuromodulation treatments, for example, rTMS, on the corticospinal tract.

04D.02 Place of Pharyngeal Phase of Swallowing Onset: Meta-Analysis
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Abstract Aim: To review the literature about the place of triggering the pharyngeal phase of swallowing in adults and elderly, asymptomatic and symptomatic. Methodology: It was done by a research in the bases PubMed, BIREME, SciELO, using the Descriptors fluoroscopia (fluoroscopy), deglutição (swallowing) and faringe (pharynx). Selection Criteria: Papers published between 2005 and 2015, with adults and elderly, whom were undergoing Videofluoroscopy Swallow Study and had cited the place of triggering the pharyngeal phase. Descriptive analysis was performed and meta-analysis with study of heterogeneity and grouped measures with random effect by I2 statistic. For ratio calculation in the meta-analysis, the places of triggering the pharyngeal phase described in the articles were classified by Modified Barium Swallowing protocol - Measurement Tool for Swallowing Impairment (MBSImp). Results: At the end we selected 12 articles for descriptive analysis and seven for meta-analysis. Heterogeneity was found between studies, especially because of the clinical and methodological differences. The random effect indicated predominance (58%) from the beginning of the pharyngeal phase of swallowing in zero and one levels and a MBSImp protocol. In asymptomatic individuals was observed the triggering of the pharyngeal phase was in the oral cavity, base of the tongue, the base of the tongue and vallecula. In symptomatic individuals the triggering was observed mainly in the oropharynx, valleculae, hypopharynx and piriform sinus. Conclusion: We noted a major frequency of the pharyngeal phase of swallowing in vallecula. The triggering of the pharyngeal phase in hypopharynx and piriform was more observed in the elderly or individuals who has any comorbidities. Key Words: Deglutition, swallow, dysphagia, fluoroscopy and pharynx.

04D.03 Visualization of Swallowing Physiology by means of Surface Electromyography and Electropalatography
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Introduction For a detailed visualization of swallowing physiology, a combination of surface electromyography (sEMG) and electropalatography (EPG) is promising, but has not been utilized so far in the previous research. The current study aimed at the development of an animation model of the oropharyngeal swallowing on the basis of simultaneous sEMG and EPG recordings, in combination with the videofluoroscopy (VFS) in the first stages of the model development. Material & Methods sEMG, EPG, and VFS were conducted simultaneously with three adult male patients without swallowing disorders. Test subjects were asked to swallow 5 and 20 ml of fluid as well as 10 ml of a thick liquid and to read aloud two sentences containing all native sounds of the German language. Swallowing-related structures were marked with 64 points in each VFS movie frame: tongue, hyoid, velum etc. Results: A multivariate mixed-effects regression was calculated to predict x- and y-coordinates of swallowing-related points of interest (velum, tongue etc.) in the VFS images. After the training of the software algorithm, it predicts the positions of the swallowing-related organs on the basis of sEMG and EPG data only, without VFS. In a special software, animation of swallowing-related movements is generated from the recorded sEMG-EPG-data. Conclusions: The animation model can visualize swallowing processes, for instance, for biofeedback therapies, by means of a special software on the basis of sEMG, EPG, and VFS data. The software was trained to produce animations without any further use of VFS and, hence, without exposure of test subjects to the radiation.

04D.04 Intrapersonal Variation in the Swallowing-Related Surface Electromyography Signals
P. Pluschinski\textsuperscript{1}; E. Zaretsky\textsuperscript{1}; P. Birkholz\textsuperscript{2}; C. Neuschaefer-Rube\textsuperscript{2}; C. Hey\textsuperscript{1} \textsuperscript{1}University Hospital of Marburg; \textsuperscript{2}Technische Universität Dresden; \textsuperscript{3}University Hospital of Aachen.

Introduction: By means of surface electromyography (sEMG), biomechanical swallowing-related muscular activities can be recorded and
Introduction: Swallowing is well coordinated to ventilation. This coordination caused by alteration of the ventilatory afferences.

Material and Methods: Swallowing-related sEMG activities of eight healthy adult test subjects (three males, five females, 20-63 years) were tested on 16 electrode placement positions on the face, neck and the mouth base. All three test sessions were conducted on the same day without breaks in between. In each session, test subjects swallowed five consistencies (empty, water, applesauce, mashed potato, and bread) and three volumes (5, 10, 20 ml/gr). This resulted in a total of 150 swallows per subject, 50 in each session. Area under the curve (integral) and other geometrical parameters were calculated for sEMG signals. Associations between integral and characteristics of test subjects and of bolus were analyzed by intra-class correlations (ICC, two-way random model) as well as by a linear mixed model with repeated measures. Results: With an ICC of .963, the correlation between integral values in three test sessions can be considered very high. Neither bolus consistency and volume nor electrode placement regions (m. orbicularis oris, m. masseter, submental and paralaryngeal regions) were associated with the distribution of integral. Test subjects’ age and gender as well as sEMG channels yielded highly significant results as independent fixed factors in the mixed model. Conclusions: sEMG values remained highly stable between test sessions and were mostly influenced by characteristics of test subjects, and not by those of bolus.

O6D.05 EFFECT OF PHRENIC NERVE SECTION ON SWALLOWING IN RATS L. Ghannouchi1; C. Duclos2; E. Meret2, J.P. Marie2; E. Verin2 / 1EPS Farhat Hached Sousse; 2 EA 3880, GRHV Rouen University

Introduction: Swallowing is well coordinated to ventilation. This coordination can be disturbed if either the swallowing or the ventilation is altered. In fact, chronic respiratory diseases as well as hypercapnia induced oropharyngeal dysphagia (OD). It is probably due to the impairment of coordination caused by alteration of the ventilatory afferences.

Knowing that the phrenic nerve contains both motor and sensory fibers, our hypothesis was that the section of this afference could alter the ventilation as well as the coordination of swallowing-ventilation. Material and methods: The study was carried out on 20 male Sprague-Dawley rats subdivided in 2 groups (G1: left phrenic nerve section, G2: sham group), using whole-body plethysmography and video recordings. The rats were given water via a baby bottle fitted with a nipple after 24 h without drinking. The experiment was continued until rest ventilation and swallowing periods were identified on the video recordings. Results: At rest, there was a decrease of tidal volume (VT) and expiratory time (TE) in G1 when compared to G2 (p<0.005). During deglutition, no differences were observed in swallowing frequency (SF) and in percentage in deglutition occurring during inspiration (% I-I). However, the VT and mean inspiratory flow (VT/TI) decreased in G1 when compared to G2 (p<0.05). VT/TI increased during deglutition in G1 and G2 when compared to VT/TI at rest (p<0.0005). This increase was bigger in G2 than G1. Conclusion: Phrenic nerve section decreased the ventilation without altering both swallowing and coordination of swallowing and ventilation. The decrease of the VT/TI could just be explained by the decrease of the response of diaphragm to the ventilatory control system.

O6D.06 SUSTAINED EFFECTS OF OROPHARYNGEAL STIMULATION WITH CARBONATED BEVERAGES TO IMPROVE SWALLOWING MOVEMENTS: AN ANALYSIS OF SWALLOWING SOUNDS M. Morishita1; J. Sota2; M. Kobayashi1 / 1Kibi International University; 2 Watanabe Hospital

Introduction: Carbonated beverages have been reported to shorten the pharyngeal phase, and reduce pharyngeal residues during swallowing by stimulating the pharynx with carbonic acid they contain. However, the sustained effects of such beverages to improve swallowing movements even after swallowing have not yet been examined. The present study measured the times when swallowing sounds were identified by cervical auscultation, with a view to clarifying the sustained effects of carbonated beverages to improve swallowing movements after swallowing. Material & Methods: Twelve patients (mean age: 84.6±5.6) without dysphagia, who had been hospitalized due to a central nervous system or orthopedic disease, were studied. Swallowing sounds in the cervical region were measured by auscultation using a microphone attached to the inside of a stethoscope tube, and the collected sounds were input into a personal computer. The patients initially swallowed 5 mL of water and, after a sufficient pause, 20 mL of a carbonated beverage. The sustained effects of the carbonated beverage to improve swallowing movements were evaluated by measuring sounds when swallowing the 5 mL of water at the following times: immediately and at 1 to 9 minutes at intervals of 2 minutes after swallowing the carbonated beverage. For comparison, swallowing sounds before and after swallowing the same volume of water were also measured on a different day (control condition). Analysis was performed to calculate: the time from a start signal to the beginning of swallowing (response time); those when the first and second peak components of individual swallowing sounds appeared (P1 and P2 times, respectively); and those when all swallowing sounds were identified (swallowing sound times). For each item, a two-way factorial analysis of variance was performed, focusing on the relationships among the conditions and elapsed times. Results: A significant shortening in the P2 time was observed until 5 minutes after swallowing the carbonated beverage. All swallowing sound times markedly shortened until 1 minute after swallowing it. Under the control condition, there were no significant temporal changes in any item. Conclusions: In previous studies, the second peak components of swallowing sounds were shown to reflect upper-sphincter-opening sounds. The results of the present study demonstrated that carbonated beverages improve swallowing movements by shortening the late pharyngeal phase of swallowing, and such effects last until 5 minutes after swallowing them.
**06D.07 RELATIONSHIP BETWEEN SWALLOWING PHYSIOLOGY MEASURES AND DYSPHAGIA SEVERITY**

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Introduction: Defining dysphagia severity is an important outcome of swallowing evaluations. Several indices, such as the Dysphagia Outcomes and Severity Scale (DOSS) (O’Neil et al., 1999) and the Functional Oral Intake Scale (FOIS) (Crary et al., 2005) provide interpretations for dysphagia severity, however they have a heavier emphasis on bolus flow. Whereas research indicates the importance of defining swallowing physiology, the impact of physiology on determination of severity has not been well defined. The aim of this study was to examine the relationship between swallowing physiology and dysphagia severity. Method: Videofluoroscopic swallowing study (VFSS) data were derived from a prior research of 118 adult stroke patients. Physiologic measures of oral bolus prep, tongue base retraction, hyoid excursion, epiglottic inversion, pharyngeal stripping and UES opening were subjectively rated on a four point rating scale (normal, mild, moderate and severely impaired). Additionally, we rated the severity using the FOIS and DOSS. Multinomial logistic regression was performed to examine the effects of physiology on the severity of the subjects’ swallowing. Results: None of the physiological measures significantly distinguished severity levels. Milder impairments in hyolaryngeal excursion appeared more likely to be rated with Level 5 and above on the FOIS (lesser severity). Results suggest clinicians have historically defined severity largely based on bolus flow rather than physiology, despite the fact that physiology guides treatment. Bolus flow correlates aid in understanding functional outcomes, however it is the physiological impairments that impact bolus flow. Defining severity based on physiology is important for interpreting treatment effects. Data were derived from a prior study. Recent research in the utilization of physiology, such as the MBSImP, may be changing this practice and enhancing our examinations. Prospective data collection is warranted.

**06D.08 EFFECTS OF EFFORTFUL SWALLOW ON CARDIAC AUTONOMIC REGULATION**

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Introduction: Swallowing-induced changes in heart rate have been recently reported. However, it is not apparent the responses of heart rate variability (HRV) elicited by effortful swallow maneuver. We investigated the acute effects of effortful swallowing maneuver on HRV. Material and Methods: This study was performed on 34 healthy women between 18 and 35 years old. We assessed heart rate variability (HRV) in the time (SDNN, RMSSD and pNN50) and frequency (HF, LF and LF/ HF ratio) domains and visual analysis through the Poincaré plot. The subjects remained at rest for 5 minutes during spontaneous swallowing and then performed effortful swallowing for 5 minutes. HRV was analyzed during spontaneous and effortful swallowing. Results: We found no significant differences for SDNN, pNN50, RMSSD, HF in absolute units (ms2). There is a trend for increase of LF in absolute (p=0.05) and normalized (p=0.08) units during effortful swallowing. HF in normalized units reduced (p=0.02) during effortful swallowing and LF/HF ratio (p=0.03) increased during effortful swallowing. Conclusion: Effortful swallow maneuver in healthy women increased sympathetic cardiac modulation, indicating a cardiac overload.

**06D.09 RELATIONSHIP BETWEEN EATING POSTURE AND MAXIMUM TONGUE PRESSURE IN HEALTHY YOUNG AND DEPENDENT ELDERLY PEOPLE**

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Introduction: Posture during eating and swallowing is important for dysphagia patients in addition to food morphology. However, eating posture is not always set because of patients’ health condition and nursing situation. The purpose of this study is to see the influence of eating posture on the maximum tongue pressure as a factor of oropharyngeal intake in healthy young and dependent elderly people. Materials & Methods: Forty-three healthy young people (13 male, 30 female, 19-39y) and 33 dependent elderly people (14 male, 19 female, 67-96y) were participated. Maximum tongue pressures were measured under the conditions below (JMS tongue pressure measurement device TM, Japan). Cond.1: posture in bed remaining just after sitting up, Cond. 2: eating posture in bed with only head position adjustment, Cond. 3: eating posture in bed with appropriate adjustment of the whole body position by physical and speech therapists, Cond.4: posture in wheelchair remaining just after transferred from bed, Cond 5: eating posture in wheelchair with appropriate adjustment of the whole body position by both therapists. Friedman test, Dunnett test and Wilcoxon’s signed rank test were used for statistical analysis. Results: Maximum tongue pressure in bed was larger in the Cond.3 (mean 40.8 kPa in young, 16.9 kPa in dependent elderly) compared to Cond. 1 (34.7 kPa in young, 12.2 kPa in dependent elderly) and Cond. 2(36.4 kPa in young, 14.1 kPa in dependent elderly) (P< 0.01). Maximum tongue pressure in Cond. 5 (40.6 kPa in young, 18.5 kPa in dependent elderly) was larger than the Cond. 4 (37.5 kPa in young, 15.9 kPa in dependent elderly) (P< 0.01). Maximum tongue pressure in bed and in wheelchair had significantly difference (P< 0.01). Also, there were significant differences of each pressure in Conditions between subjects groups. Conclusion: Eating posture had influence on maximum tongue pressure. The adjustment of appropriate eating posture for safer swallowing is expected.

**06D.10 OROPHARYNGEAL AND LARYNGEAL SENSORY INNERVATION IN THE PATHOPHYSIOLOGY OF SWALLOWING DISORDERS**

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Introduction: Oropharyngeal and laryngeal sensory innervation is critical for normal swallowing. Recent advances in our understanding of oropharyngeal sensory innervation, mainly in animals, have allowed a deeper insight into the mechanisms that regulate oropharyngeal and laryngeal sensory sensitivity. However, little is known about the intestinal motility disorders. The aim of this study was to evaluate the influence of swallowing disorders on the oropharyngeal and laryngeal sensory innervation. Material and Methods: This study was performed on 34 healthy women between 18 and 35 years old. We assessed heart rate variability (HRV) in the time (SDNN, RMSSD and pNN50) and frequency (HF, LF and LF/ HF ratio) domains and visual analysis through the Poincaré plot. The subjects remained at rest for 5 minutes during spontaneous swallowing and then performed effortful swallowing for 5 minutes. HRV was analyzed during spontaneous and effortful swallowing. Results: We found no significant differences for SDNN, pNN50, RMSSD, HF in absolute units (ms2). There is a trend for increase of LF in absolute (p=0.05) and normalized (p=0.08) units during effortful swallowing. HF in normalized units reduced (p=0.02) during effortful swallowing and LF/HF ratio (p=0.03) increased during effortful swallowing. Conclusion: Effortful swallow maneuver in healthy women increased sympathetic cardiac modulation, indicating a cardiac overload.
Oropharyngeal dysphagia affects older and neurological patients causing malnutrition and dehydration and increasing the risk for aspiration pneumonia. There is evidence that sensory deficits in those populations are closely related to swallowing disorders and several research groups are developing new therapies based on sensory stimulation of the oropharynx. More information on the sensory innervation participating in the swallow response is needed to better understand oropharyngeal dysphagia pathophysiology and to develop new treatments. We reviewed the literature on the sensory innervation of the human oropharynx and larynx in healthy people compared with patients with swallowing disorders in order to unravel the abnormalities that may lead to the loss of sensitivity in patients with OD. We also hypothesize the pathway through which active sensory enhancement treatments may elicit their therapeutic effect on patients with swallowing dysfunctions. We present the results covering information on the anatomy, histology, ultrastructure and molecular biology of the sensory innervation of the swallowing function.

**06D.11 IMPAIRED EVENT-RELATED SENSORY-EVOKED POTENTIALS TO PHARYNGEAL STIMULATION IN POST-STROKE DYSPHAGIA**; C. Cabré1; O. Ortega2; N. Vilardell1; L. Rofes2; P. Clavé2 1Gastrointestinal Physiology Laboratory, Hospital de Mataró; 2Centro de Investigación Biomédica en Red de enfermedades hepáticas y digestivas (CIBERehd), Hospital de Mataró.

Introduction. Post-stroke oropharyngeal dysphagia (OD) is due to focal involvement of motor structures at the brainstem or efferent pathways upstream. However, the role of altered sensory pathways as a consequence of stroke is not known. We hypothesized that post-stroke OD patients would show abnormal event-related sensory-evoked potentials to pharyngeal stimulation (fSEP) in comparison with non-dysphagic post-stroke patients and healthy volunteers. Methods: We recruited 19 chronic uni-hemispheric post-stroke patients, 9 with OD (7 female, 79.2+15.5 y, NIHSS 2.4+1.9, Penetration-Aspiration scale 3.9+0.8) and 10 without OD (6 female, 67.5+17.8 y, NIHSS 0.4+0.5, PAS 1.3+0.6), together with 11 age-matched healthy controls. To obtain fSEP, we recorded electroencephalographic activity to electrical stimulation of the pharyngeal wall (200 pulses, 0.2Hz) using a nasopharyngeal catheter. We calculated pharyngeal perception and pain sensory thresholds, peak-to-peak amplitude and peak-latency of components N1, P1, N2 and P2 in a 400ms-visualization window from stimulus artifact. All patients underwent brain MRI for correlation analysis. Results: Pharyngeal sensory thresholds were higher in patients than in controls, with significant difference for pain thresholds in dysphagic patients (p<0.05). As a group, post-stroke OD patients showed lower fSEP latency than the other two groups (p<0.05), caused by unilateral ipsilesional delay of N1-P1-N2-wave components in most patients (Table). Low amplitude and asymmetric N2-P2-wave components between both hemispheres were frequently found in OD patients in contrast to non-dysphagic persons (Figure). Conclusions: Reduced pharyngeal sensitivity and impaired cortical integration of pharyngeal sensory input is a key feature of post-stroke OD patients. These results highlight the possible role of afferent pathway damage in OD.

**06D.12 EFFECTS OF ANTIPSYCHOTIC MEDICATION ON THE SWALLOWING FUNCTION: A SYSTEMATIC REVIEW**

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INTRODUCTION The use of antipsychotic drugs (also known as neuroleptics) has been suggested to be associated with OD. This systematic review explores the effect of neuroleptic medication on swallowing.

MATERIAL AND METHODS A systematic literature search was carried out using the electronic databases Medline and EMBASE. In Embase, the Emtree terms swallowing or dysphagia were combined with neuroleptics or antipsychotic medications. In Pubmed, the Mesh terms antipsychotic agents combined with deglutition disorders and deglutition. To identify the most recent publications, the search was supplemented by using free-text words (truncation or wildcard) in Embase and Pubmed (for the period after January 2015 up to January 2016). Two independent reviewers assessed the eligibility of each report. RESULTS We obtained 22 relevant studies of
which 3 were prospective cohort studies, 1 cross-sectional study, 1 retrospective study and the other 17 were case reports. We reviewed scientific papers separately from the case reports. 00 in patients treated with neuroleptics was mostly due to extrapyramidal syndromes (EPS). The prevalence of EPS ranged from 20% to 50% in the studies included and bradykinetic related dysphagia seemed to occur in patients of all ages. Both typical and atypical neuroleptics were commonly implicated (Table 1). To resolve dysphagia, the most typical strategy was changing drug (61.1%) or lowering the dose (22.2%). CONCLUSIONS While it is difficult to compare studies due to their heterogeneous methodologies and outcome measurements these findings support the notion that neuroleptic medications result in extrapyramidal symptoms that can affect swallowing. The pathophysiologic mechanisms and direction of this association need further study using a purposively designed prospective or intervention study on people at high risk for dysphagia. 06D.13 HOW DOES THE CHIN UP POSTURE INFLUENCE THE PHYSIOLOGY OF SWALLOWING? I. Calvo1; K.L. Sunday2; P. Macrae3; L.A. Humbert21 1Casa Cura Policlínico; 2University of Florida; 3University of Canterbury

Introduction: The chin up posture is often used to manage oral stage dysphagia. However, it is unknown whether the chin up posture can alter pharyngeal phase kinematics, like the sequence of swallowing events. The aim of this study was to examine the effects of the chin up posture on the sequence of swallowing events during and immediately after chin up swallowing. Material & Methods: 12 healthy young adults participated in the study. Each participant performed 45 consecutive swallows of 5 ml thin liquids across three phases: Phase 1 - 5 in neutral head position; Phase 2 - 30 during chin-up posture; and, Phase 3 - 10 in neutral head position (recorded with videofluoroscopy). Nine swallowing events were put in sequential order: bolus head enter pharynx, bolus tail enter pharynx, hyoid burst, hyoid maximum peak, laryngeal vestibule closure, laryngeal vestibule opening, upper esophageal sphincter (UES) opening, bolus head into UES, bolus tail past UES. Results: For Phase 1 versus Phase 2, chin up swallowing led to later onset of maximum hyoid peak and earlier onset of laryngeal vestibule closure. No changes were found in swallowing kinematics over the course of 30 chin up swallowing events (Phase 2). For Phase 1 versus Phase 3, hyoid burst onset was later upon returning to neutral position and UES related events occurred earlier in the swallow when returning to neutral position after chin up swallowing. Conclusions: Although the chin up posture is traditionally used for oral phase dysphagia, the events of the pharyngeal swallow were altered before and after chin up swallowing. Specifically, the changes appear to challenge both swallowing kinematics and bolus flow events. 06D.14 AUTOMATIC IMITATION OF SWALLOWING G. Matsuda1; M. Yamawaki11 1Kyoto Prefectural University of Medicine

Introduction: We investigated whether observing or hearing the swallowing function aids in swallowing. Psychological literature states that humans have a response tendency to unconsciously imitate the actions of other individuals, known as automatic imitation (AI). If AI of swallowing can be achieved, it would lead to the development of a simple and intuitive rehabilitation method for patients with dysphagia. Material & Methods: The surface electromyography (EMG) electrodes were attached to the right suprahyoid muscles, and an electronic microphone was attached to the left side of the laryngeal prominence in 16 healthy adults (mean age, 23.1 years). The participants were asked to swallow 3 mL of water as soon as possible when the color of the white fixation cross changed to green. Simultaneously, one of the four experimental stimuli (a moving image of a man swallowing with a swallowing sound, a moving image without sound, a still image of a man with a swallowing sound, and a still image without sound) was displayed behind the cross. If AI of swallowing can be achieved, the onset of swallowing would be faster when the moving image or the swallowing sound was shown. We calculated the swallowing reaction time (SwRT) from the amplitude of EMG and acoustic data under each condition, and performed a two-way repeated-measures analysis of variance (image type <times> sound type). Results: The main effect of the sound type was found in both EMG and acoustic data (p<0.01 for both), and the SwRT was approximately 60 ms faster when the swallowing sound was played. Conclusions: Although hearing the swallowing sound facilitated participants’ swallowing, observing the action had no effect. In daily life, we rarely observe the laryngeal swallowing motion but commonly hear the swallowing sound. Therefore, a swallowing sound had a greater effect on the AI. We plan to conduct a similar experiment to determine the effective stimuli for the AI of swallowing. 06D.15 THE IMPACT OF ANTERIOR CERVICAL OSTEOPHYTES ON OROPHARYNGEAL SWALLOWING J.H.H. Meijers1; W. Pitz2; B. Kremer2; L.W.J. Baijens11 1Maastricht University Medical Centre

Introduction: Cervical osteophytes in dysphagic patients may play a role in the severity of the swallowing impairment. This study investigates if there is a relationship between the presence of cervical osteophytes and swallowing impairment. Material and Methods: Twelve patients with diagnosis of oropharyngeal dysphagia and osteophytes were included. All patients underwent a standardized videofluoroscopic swallowing examination (VFS) using three standardized bolus consistencies. Two experienced observers analyzed four visuo perceptual outcome variables in the randomized and anonymized video recordings: piece-meal deglutition, postswallow vallecular and pyriform sinus pooling and, laryngeal penetration and aspiration. Epiglottis tilting, compression of the hypopharynx and/or upper esophagus by the osteophytes, and the size of the osteophytes were evaluated too. Results: The mean age of the participants was 65.7 (SD 12.72). The osteophytes measured...
5 to 15 mm (mean 9.8). In nine patients more than one vertebral segment was involved. Of the patients, 25% had osteophytes in the upper cervical spine, 83% in the middle, and 25% in the lower cervical spine. The main VFS outcomes were: laryngeal penetration with thin liquid (83.3%) and piecemeal deglutition (60.8%). Few (16.6%) patients with compression of the upper esophagus presented postswallow pyriform sinus pooling. Incomplete tilting of the epiglottis during swallowing was not associated with penetration and aspiration. Conclusion: The presence of cervical osteophyte(s) did not have a clear influence on the severity of the swallowing impairment in this group of dysphagic patients. Nevertheless cervical osteophytes should always be considered when evaluating dysphagia as they might be responsible for individual patients’ symptoms.

**06D.17 DEVELOPING A THERAPEUTIC PATIENT EDUCATION (TPE) BASED WORKSHOP ON ASPIRATION AIMED AT PATIENTS WITH DYSPHAGIA AND THEIR FAMILY CAREGIVER: A PILOT STUDY**

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Introduction: In speech therapy, conventional methods for patient rehabilitation may be insufficient. Therapeutic Patient Education (TPE) may improve the results of these conventional techniques. The goal of this study is to assess the impact of a TPE based Workshop on aspiration, designed for patients with dysphagia and their family caregiver, on adherence to conventional speech therapy rehabilitation and quality of life (QOL). Materials and Method: In this randomized study, the intervention takes place between February and April 2016 on 16 patients. In the Experimental Group (EG), the TPE based workshop is added to the conventional rehabilitation of 8 patients with dysphagia treated at home, in a private practice, a rehabilitation center or in a hospital. The Control Group (CG) is formed of 8 patients with dysphagia undergoing a conventional rehabilitation only. The pre- and post-test evaluation is based on: Arabic-Dysphagia Handicap Index (A-DHI) assessing handicap perception, Caregiver Mealtime and Dysphagia Questionnaire (CMDQ) assessing adherence to the rehabilitation, A questionnaire assessing knowledge linked to aspiration, A QOL scale. The post-test is conducted one week following the pre-test for the CG and following the TPE based workshop for the EG. Results: Results show a significant difference in the scores of the knowledge questionnaire (p-value=.008) and the QOL scale (p-value=.04) obtained during pre- and post-test for the EG only. The difference is not statistically significant in the scores of both the A-DHI and CMDQ questionnaires for both groups. Conclusion: Improvement in the QOL in the EG is an encouraging result confirming the usefulness of the TPE based workshop. In order to obtain stronger results, the study should be continued by including a larger number of patients and adapting the CMDQ as it was highly complicated for patients to fill and for researchers to interpret.
a good life quality. The aim of this study is to develop an assessment estimating the risk of swallowing decompensation. This assessment is composed by the integration of the result of WS-Test, some data of the medical history and the appreciation of the pleasure to eat. It was applied to an nursing home of 120 elderly people followed during 3 months. The occurrences of pulmonary events was the reference for the calculation of sensitivity and specificity of the test. The result are encouraging with a specificity of 61.22% and a sensitivity of 72.72% for a test estimating the risk of pulmonary decompensation related to swallowing disorders. In conclusion, the construct of screening searching to prevent decompensation of swallowing disorders in nursing home is a new approach. The validation of a test estimating the risk of pulmonary decompensation related to swallowing disorders needs to be confirmed in numerous nursing home.

**06E.02 SWALLOWING IMPAIRMENT PROFILES IN AMYOTROPHIC LATERAL SCLEROSIS**

L.C. Tabor1; E.K. Plowman1; R. Robison1 / ‘University of Florida’

Introduction: Although dysphagia is a prominent symptom of bulbar dysfunction in individuals with ALS, specific mechanisms contributing to unsafe swallowing have yet to be defined. The aim of this study was to 1) characterize swallow safety profiles and 2) identify primary mechanisms contributing to aspiration in individuals with ALS. Methods: A sample of 30 individuals with definite ALS (EL-ESCorial Criteria) completed a standardized videofluoroscopic swallowing protocol consisting of: 3cc ultra-thin, 3cc paste and 20cc ultra-thin barium bolus presentations (Varibar, 20% w/v). Frame-by-frame objective analyses were completed in a blinded fashion and included: Penetration-Aspiration Scale (PAS), timing and kinematic measures, swallow frequency counts completed in a blinded fashion and included: Penetration-Aspiration Scale (PAS, mean 3 ± 1.3), 7 of them suffered from dysphagia (PAS mean 3 ± 1.3). Exclusion criteria were bulbar onset and presence of bulbar onset and presence of tracheostomy. Subjects were assessed by spirometry as follow: FVC; VT; MEP; V; MIP; Voluntary and reflex PCF. Cough Reflex would be triggered by the inhalation of 0.4% of citric acid solution using the ultrasonic nebulizer connected with the spirometer via a bidirectional valve. To our knowledge PCF of reflex cough has not already been investigated. This study was registered to clinicaltrials.gov. Results: These preliminary data have shown that there was a significant discrepancy between the PCF of Voluntary and Reflex Cough within the ALS group and within the health group (p-value < 0.001). A correlation (p-value < 0.05) between the PCF of voluntary and reflex cough was found in both groups and also a significant correlation between PCF of reflex cough and FVC (p-value < 0.05) (tab. 1). In addition, it has been found a significant correlation of the voluntary and the reflex of PCF with the severity of dysphagia (p-value < 0.05). Conclusion: This study furnished the preliminary data of PCF of reflex cough, which is fundamental analysis in the evaluation of dysphagia and respiratory abilities in ALS patients.

**06E.03 ASSESSMENT OF OBJECTIVE MEASUREMENTS OF VOLUNTARY AND REFLEX COUGH IN ALS PATIENTS**

I Battel1; C. Zanetti1; C. Enrichi1; I. Koch1; F. Meneghello1 / ‘Fondazione Ospedale San Camillo IRCCS’

Introduction: This study investigates the presence and strength of reflex and voluntary cough in patients with Amyotrophic Lateral Sclerosis (ALS). The assessment of cough provides information of the ability to expel inhaled materials and also to maintain airway clearance. This assessment is particularly fundamental in patients with ALS who have a deficit of the respiratory muscles and inability to generate inspiratory and expiratory flow. Aim: The first goal of this study is to provide preliminary data of the PCF of voluntary and reflex cough in ALS patients and to compare them with a control group of healthy subjects. Methods: It has been recruited 10 healthy participants (age mean 58 ± 19.3); 16 ALS patients (age mean 61.9 ±15.3), 7 of them suffered from dysphagia (PAS mean 3 ± 1.3). Exclusion criteria were bulbar onset and presence of tracheostomy. Subject were assessed by spirometry as follow: FVC; VT; MEP; V; MIP; Voluntary and reflex PCF. Cough Reflex would be triggered by the inhalation of 0.4% of citric acid solution using the ultrasonic nebulizer connected with the spirometer via a bidirectional valve. To our knowledge PCF of reflex cough has not already been investigated. This study was registered to clinicaltrials.gov. Results: These preliminary data have shown that there was a significant discrepancy between the PCF of Voluntary and Reflex Cough within the ALS group and within the health group (p-value < 0.001). A correlation (p-value < 0.05) between the PCF of voluntary and reflex cough was found in both groups and also a significant correlation between PCF of reflex cough and FVC (p-value < 0.05) (tab. 1). In addition, it has been found a significant correlation of the voluntary and the reflex of PCF with the severity of dysphagia (p-value < 0.05). Conclusion: This study furnished the preliminary data of PCF of reflex cough, which is fundamental analysis in the evaluation of dysphagia and respiratory abilities in ALS patients.

**06E.04 CLINICAL PREDICTORS FOR TRACHEOSTOMY DECANNULATION IN PATIENTS WITH CENTRAL NERVOUS SYSTEM DISEASE**

I Battel1; C. Enrichi1; C. Zanetti1; I. Koch1 / ‘Fondazione Ospedale San Camillo IRCCS’

Introduction: People with Central Nervous System Disease (CNSD) often require tracheostomy to protect airways and to guarantee prolonged mechanical ventilation[1,2]. Although, it has been recognized that fast and safe decannulation improves recovery process[3,4] few studies provided evidence for decannulation criteria. The aim of this
study was to assess which clinical parameters are the best predictors for decannulation with regard to a protocol we proposed for decannulation of patients suffering from CNSD. Methods: 57 tracheostomized patients (age: 54.5±16.5) with a diagnosis of CNSD and clinically stable were recruited. Mean length of time of tracheostomy was 152±106 days and Level of Cognitive Functioning (LCF) ranged from 1 to 8 (mean = 4.9±2). The patients were assessed for decannulation according to following criteria:1) Voluntary Cough (PCF ≥ Greater or equal>160 l/min) [5,6] and presence of Reflex Cough[12]; 2) Tracheostomy tube capping for 72h[6,8]; 3) Swallowing assessment (PAS ≤less or equal<5 at FEES [9,10]; 4) n° of suctions <less or equal<2 every 8 hours[11]; 5) Upper Airway patency at FEES (lumen > 50%)[6,12]; 6) Nocturnal SpO2 > 90%(8); 7) level of consciousness (Glasgow Coma Scale Score >8)[11]. Results: 42 (74%) out of 57 patients were successfully weaned from tracheostomy according to the present protocol, without complications at 6 months follow-up; 3 patients (5%) were re-cannulated. The sensitivity and specificity for every outcomes were assessed: Tube Capping (93.3%; 100%); Airway patency (79.2%; 100%); Swallowing function (95.2%; 80%); 4) Suctions (90.5%, 73.3%); GCS>8 (81%, 75%); Reflex Cough (75%, 77%); SpO2 (93.3%, 31.2%). Voluntary Cough efficacy (87.6%, 29.3%) was assessed only in 37 patients because of severe cognitive impairment.

Conclusion: This study showed the best prognostic criteria for decannulation were tube cupping, airway patency and PAS > 5. The difficulties in assessing voluntary cough related to cognitive deficit, thus cough reflex test might be more reliable tool.

06E.05 OROPHARYNGEAL DYSPHAGIA IN DIFFERENT STAGES OF PARKINSON´S DISEASE
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Introduction: Dysphagia is a common disorder in Parkinson´s Disease (PD) usually in late stages because the symptoms are not relevant in early phase. The relationship between dysphagia and the PD stage can improve our management in oropharyngeal dysphagia in this population. The aim of this study was to compare the swallowing findings in different stages of PD. Material&Methods: 31 individuals divided in two groups, with means 70 years old, 15 female and 16 male. The G1 (1, and 2 stage Hoehn&Yahr scale) with 13 patients, and G2 (3, 4, and 5 stage Hoehn&Yahr scale) with 18 patients from a Rehabilitation Center. We did a questionnaire and a Fiberoptic Endoscopic Evaluation of Swallowing (FEES) exam with three different consistencies (puree, thin liquid and liquid) and, dyed with blue color. Applied Fisher Test and considered significant p<0.05. Results: We observed no difference in both groups G1 and G2 (p=0.89). All these patients have presence of dysphagia symptoms and no difference in the findings of FEES as premature spillage, residues, penetration and aspiration independent of the group. Conclusion: There were no differences in swallowing findings in FEES in the groups. All stages in the PD have symptoms and findings in FEES with all consistency food.
pathophysiology of swallowing observed on instrumental examination within this population. Secondary objectives aimed to identify trends in dysphagia management for patients with MND. Materials & Methods: Six search engines yielded a total of 1467 unique articles for review. Abstracts were evaluated for inclusion by two independent raters, using pre-determined criteria. Of the 210 articles accepted for full-text review, 132 articles addressed at least one of the research objectives (65 excluded, 13 unavailable). Relevant data and keywords identified in each article were extracted and summarized for theme identification. Results: Reports of dysphagia in patients with MND revealed common patterns, including clinical signs/symptoms (e.g., frequent choking/coughing), contributing factors (e.g., orofacial weakness), and functional outcomes of dysphagia (e.g., prolonged mealtimes, weight loss). Other emerging trends related to poor secretion management, potential sensory impairment, and atypical swallow-respiratory coordination. Observations taken from various forms of instrumental assessment were primarily descriptive in nature, and identified a variety of oral and pharyngeal phase deficits, including the occurrence of post-swallow residue or aspiration. Management strategies most frequently related to texture modification and enteral feeding methods. Conclusions: Dysphagia in MND is highly complex and varies between patients, and across disease progression. Further research investigating swallowing pathophysiology would be beneficial to delineate the key contributing factors to impaired swallowing safety and efficiency.

06E.08 REDUCED PHARYNGEAL CONstriction IS ASSOCIATED WITH POST-SWALLOW RESIDUE IN PATIENTS WITH AMYOTROPHIC LATERAL SCLEROSIS
A.A. Waito1; L.C. Tabor2; C.M. Steele3; E.K. Plowman4

Introduction: Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease which primarily affects function of upper and lower motor neurons. More than 80% of patients with ALS will experience oropharyngeal dysphagia, characterized by impairments in swallowing safety and efficiency. Still, it remains unclear which physiological parameters of swallowing contribute most significantly to these impairments. Reduced pharyngeal strength and reduced constriction of the pharyngeal lumen are commonly reported in videofluoroscopic and manometric studies of patients with ALS. Our aim was to determine whether reduced pharyngeal constriction contributes to decreased swallowing efficiency in this population. A retrospective analysis of videofluoroscopic swallow studies was completed to address this research question. Materials & Methods: Quantitative analysis of videofluoroscopic swallow studies from 26 adults with ALS was completed for 3mL thin, 20mL thin, and 3mL pudding consistency tasks. Pixel-based measurements of pharyngeal constriction, anatomically referenced using a cervical spine scalar (C2-C4), were also obtained and analyzed[1]. Swallowing efficiency was reflected by post-swallow residue, measured using the Normalized Residue Ratio Scale[2], and the number of swallows generated per bolus task. Results: Reduced constriction of the pharyngeal lumen was identified in 52% of 3mL thin trials, 62% of 20mL thin trials, and 44% of 3mL puree trials. Impaired pharyngeal constriction was found to be significantly more common in bulbar versus spinal-onset patient groups. Significant correlations were found between impaired pharyngeal constriction and vallecular residue (R2=0.732), pyriform sinus residue (R2=0.595), and the number of swallows per bolus task (R2=0.348). Conclusions: Maximum pharyngeal constriction appears to be a significant physiological parameter related to swallow inefficiency in patients with ALS, particularly in cases with bulbar-onset symptomology.

06E.09 ALEXANDER DISEASE: DYSPHAGIA ASSESSMENT RESULTS
J.M. Barroso1; L.A. Narváez2; S.M. Jiménez1


06E.10 GLOSSOPHARYNGEAL NEURALGIA: DYSPHAGIA AFTER RHINOTOMY
J.M. Barroso1; L.A. Narváez2; S.M. Jiménez1

Introduction/Aim: glossopharyngeal neuralgia is a clinical condition characterized by intense pain of sudden appearance and episodic
course in the nasopharynx, tonsil area, tongue base and ear, of variable duration. When it’s not possible to control with medical treatment a nerve rhizotomy can be performed. Materials and Methods: Female, 58 years-old, consults because of daily crisis of burning pain in right hemitongue and ear, which would wake her up at night since 10 years ago. She diagnosed of trigeminal neuralgia, performing thermocoagulation on the nerve, after failing to show improvement with carbamazepine, gabapentin and pregabalin. After proving to be ineffective, the diagnosis was changed to glossoparyngeal neuralgia, performing a year laterrough rhizotomy along with the upper third of the vagus. The pain stops, but a complete paralysis of the right vagus appears. Results: Physical Examination: labored breathing, dysphonia, drooling and bilateral nystagmus that lead to dizziness. Nasopharyngolaryngoscopy: RVC paralyzed in paramedian position. After taking yogurt, involuntary cough with vomit tolerated. None viscosity tolerated. Feeding through PEG is recommended. After one year and 3 months of logopedic rehabilitation, she presents significant improvement regarding voice, with better resonance and quality, showing complete glottic closure by compensation of the LVC and amelioration of the dyspnea sensation and dizziness. She still has constant drooling and dysphagia; this is why she feeds herself through PEG. Conclusion: Neuralgias can be very disabling and frequently refractory to medication. Invasive treatment should be regarded as the last therapeutic option, and when required, the patient should be always properly informed of the potential complications and the everlasting unrepairable sequelae.

**06E.11 IS BOTULINUM TOXIN EFFECTIVE AS AN INTERVENTION FOR DROOLING IN IDIOPATHIC PARKINSON’S DISEASE? DECRYPTING THE EVIDENCE**

F. Hill1; N. Miller1; R.A. Walsh4; D. Mockler4; R. McDowell4; M Walsh4

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Introduction: Drooling, referring to the unintentional loss of saliva from the mouth, is a common problem in Idiopathic Parkinson’s Disease (IPD), particularly with advancing disease. Drooling can have a negative impact on the person with IPD medically, socially, and psychologically, and can affect quality of life. Botulinum toxin injection into the salivary glands is an increasingly common intervention for drooling in this population despite the lack of clinical guidelines and varying efficacy of this approach. The aim of this Cochrane research is to establish the effectiveness and safety of botulinum toxin in reducing or eliminating drooling in adults with IPD. Method: Published and published randomised controlled trials (RCTs) and quasi-RCTs published in any language are included. Participants are adults with a clinical diagnosis of IPD according to the United Kingdom Parkinson’s Disease Society Brain Bank diagnostic criteria (Hughes 1992) or other similar published criteria. Seven electronic databases as well as clinical trial registers, abstracts of conference proceedings, reference lists, and previous reviews have been searched. Authors have been contacted for unpublished data as relevant. Two reviewers have independently examined titles, abstracts, and key words identified from the literature search, and extracted data from included studies. Three reviewers will independently assess risk of bias for each study using the Cochrane ‘Risk of Bias’ tool. Data will be analysed using Review Manager programme 6.3. Results: Data analysis is ongoing and results will be available. Conclusion: It is vital to collate robust evidence on the benefits and risks of botulinum toxin for drooling in IPD, as well as directions for future research, in order to optimise care and inform decision making by healthcare professionals, multidisciplinary teams, individuals with IPD, their caregivers, and other key stakeholders.

**06E.12 FEES IN PATIENTS WITH HUNTINGTON DISEASE: APPLICABILITY AND PRELIMINARY DATA**

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Introduction: Huntington’s disease (HD) is a neurodegenerative genetic disorder that affects muscle coordination and leads to mental decline and behavioral symptoms. Dysphagia is highly prevalent in patients HD, but only few studies analyzed its characteristics. Previous studies on dysphagia in HD used videofluoroscopy (VFS), while no data exists on the applicability of FEES. The aim of the study is to analyze applicability of FEES and preliminarily describe dysphagia in patients with HD. Material and Methods: fourteen patients with HD (10 M, 4 F), aged 37-79 (median 51) years were recruited. Body Mass Index (BMI) was measured. Each patient underwent fiberoptic endoscopic evaluation of swallowing (FEES) with thin liquid, semisolid and solid. Penetration/aspiration scale (PAS), Yale Pharyngeal Residue Rating Scale (YPRRS), Dysphagia Outcome and Severity Scale (DOSS) were used to analyze dysphagia characteristics quantitatively. Results: BMI ranged between 18.6 and 28.7 (median 22.5). All the patients managed to completed FEES with all consistencies; VFS was never required to improve diagnostic accuracy of dysphagia. PAS scores ranged from 1 to 8 (median 1) with liquids, from 1 to 8 (median 1) with semisolids from 1 to 7 (median 1) with solids. YPPRS in the valleecule ranged from 1 to 2 (median 1) with liquids, from 1 to 2 (median 2) with semisolids and from 1 to 5 (median 3) with solids. YPPRS in the pyriform sinuses ranged from 1 to 4 (median 1) with liquids, from 1 to 4 (median 2) with semisolids and from 1 to 5 (median 3) with solids. DOSS scores ranged from 2 to 6 (median 4). Conclusions: FEES can be easily applied in everyday clinical practice for swallowing assessment in patients with HD. Further studies in a larger population are needed to deeply analyze its characteristics.
Objective: Dysphagia is a frequent and clinically relevant symptom of Parkinson’s disease (PD), leading to various threats to health and reduction in quality of life. Although the penetration-aspiration scale has become a standard for fiberoptic endoscopic evaluation of swallowing (FEES), it fails to identify oropharyngeal dysphagia symptoms. A new FEES protocol specified for PD has been recently developed in Germany. This protocol has become a standard for fiberoptic endoscopic evaluation of swallowing (FEES) and is now aimed to be investigated for inter-coder reliability. Material & Methods: FEES video recordings from 77 PD patients from a German Movement Disorder Center (aged 70.47 +/- 8.40 (mean, SD), disease duration 11.19 +/- 6.27y., median Hoehn & Yahr stage 3) previously evaluated with the final PARK-FEES were reevaluated independently by 2 experts. PARK-FEES contains 10 ordinal parameters to describe early and advanced dysphagia symptoms typically occurring in PD. During FEES examination order was performed in a standardized way incl. anatomic-physiological exam, nutrition ingestion of 3 different consistencies, and medication samples. Score assessment was done twice in order to distinguish typical swallowing performance from possible outliers/maximum values (Tab 1). Interrater reliability was calculated for all parameters, and separately for each consistency using Krippendorff’s Alpha (95% CI; bootstrapping 10k). Results: 63 of the 77 patients affected by neurological disease. Material & Methods: 36 patients affected by neurological diseases as ALS, Parkinson’s disease, Huntington’s disease, stroke and dementia were assessed using the Mann Assessment of Swallowing Ability and the self-assessment questionnaire Short Form Health Survey. Futhermore, the education's level was detected and a Fiberoptic Endoscopic Evaluation of Swallowing (FEES) was carried out on all the patients. Results: Regarding the MASA's score, 15/36 patients were normal, 7/36 patients were affected by mild dysphagia, 10/36 patients were affected by moderate dysphagia and 4/36 patients were affected by severe dysphagia. Regarding the SF-36's score, only 4/36 patients were normal, 6/36 patients had a mild emotional state’s impairment, 18/36 patients had a moderate emotional state’s impairment and 8/36 patients had a severe emotional state’s impairment. The MASA’s mean value was 169, that matches to a mild dysphagia, and the SF-36’s mean score was 41, that matches to a moderate impairment of emotional state. The most altered parameters in SF-36 were: physical role functioning, mental health, physical functioning, emotional role functioning and vitality. Comparing the scores of the MASA and SF-36, we got a highly significant statistical difference, which reveals the presence of a much more pathological value for SF-36 compared to MASA’s value (p<0.0001). There is no difference between the more educated patients and those less educated. Conclusion: Data’s analysis revealed that there’s a difference between the clinical evaluation of dysphagia and patient’s self-assessment: dysphagia has a strong negative impact on patient’s quality of life, for this reason it is important to assess the patient also as regards the psycho-emotional state, in order to plan a rehabilitation treatment that is comprehensive and personalized to each patient.
Incidence of oropharyngeal dysphagia has been studied in many neurological diseases and the aspiration is usually considered a relevant risk for pneumonia in all these diseases. However, we do not know the specific incidence of the penetration and aspiration in some diseases. The purpose of this study is to describe the incidence of penetration and laryngotracheal aspiration in neurodegenerative diseases.

Methods: Cross-sectional retrospective study design developed in a Rehabilitation Center. Included all Fiberoptic Endoscopic Evaluation of Swallowing (FEES) from 50 patients with dysphagia, between 2007 to 2015, 25 male, and 25 female, 26 to 85 years old (average 63 years old). We included 27 Parkinson Disease (PD), 18 Sclerosis Lateral Amiotrophic (SLA) and 5 Multiple Sclerosis (MS). We evaluated laryngeal penetration and silent and no silent aspiration with puree and liquid. Applied Fisher Test and considered significant p<0.05. Results: 12 (24%) individuals had penetration and/or laryngotracheal aspiration and these 5 (41.7%) had PD, 7 (58.3%) SLA and 0 (0%) MS in both food consistencies. Regarding puree consistency we found 3 (6%) episodes of the laryngeal penetration, 2 (4%) aspiration and no silent aspiration. For liquid consistency we found 10 (20%) episodes of the laryngeal penetration, 3 (6%) aspiration and 2 (4%) silent aspiration. There is not statistical difference between consistencies (p=0,59). Conclusions: There are penetration and laryngotracheal aspiration in SLA and PD and more episodes of penetration and aspiration in liquid than puree consistency.

**SATURDAY**

14:30 - 15:00 Poster session F: Dysphagia after HNC treatment

Session 15F

15F.01 THE EFFECTS OF DYSPHAGIA ON QUALITY OF LIFE IN POST-IRRADIATED NASOPHARYNGEAL CANCER PATIENTS

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Introduction: Irradiation-treated nasopharyngeal cancer (NPC) survivors with dysphagia have significant deterioration in their quality of life (QOL). Intensity-modulated radiotherapy (IMRT) is controversial in its effectiveness in reducing the prevalence of dysphagia in these patients. Previous QOL studies obtained swallowing data from self-reported severity ratings rather than objective physiological measurement and we aimed to investigate the severity of dysphagia through physiological assessments, and the factors affecting the QOL of IMRT-treated long-term NPC survivors in Hong Kong. Methods: This was a cross-sectional study of 163 irradiation-treated NPC patients recruited from Prince of Wales Hospital. All participants underwent fiberoptic endoscopic evaluation of swallowing (FEES). Swallowing performance was scored using the penetration-aspiration scale (PAS=1-5). Quality-of-life profile was collected using the Functional Assessment of Cancer Therapy - Nasopharyngeal (FACT-NP). Linear regression analysis was performed to identify significant factors that predict QOL. Results: Forty nine (30%) patients demonstrated deep penetration or aspiration (i.e. PAS>2). Quality of life was significantly lower in those with dysphagia compared to those without (p<0.001) and education level (p=0.003) were identified as significant predictors for QOL in treated NPC patients. A higher PAS score resulted in a lower QOL, whilst a higher education level predicted a higher QOL. Gender, age, stage of disease, radiation technique, time elapsed since irradiation had no significant effect on QOL. Conclusion: Despite the advancement in radiation technique for the treatment of NPC over the past decade, dysphagia remains a major clinical problem for NPC survivors, and adversely affects their quality of life. More effort is needed to prevent or delay the occurrence of dysphagia and its related complications.

15F.02 DYSPHAGIA SCREENING FRAMADYSF FOR HEAD-AND-NECK CANCER PATIENTS AFTER TUMOR RESECTION: CAN CLINICAL PREDICTORS IMPROVE THE RESULTS?
Abstract Book

C. Hey1; E. Zaretsky1; P. Pluschinski1 1University Hospital of Marburg

Introduction: Swallowing disorders are common sequelae of tumor resection in patients with head and neck cancer (HNC), despite improved modern resection and reconstruction procedures. The prevalence rate is reported to be up to 88% depending on localization, tumor size, and chosen treatment. The current study aimed to examine whether the sensitivity and specificity of the dysphagia screening FraMaDys can be improved if clinical predictors such as wet voice are also considered. Materials & Methods Both FraMaDys and fiberoptic endoscopic evaluation of swallowing (FEES) as the reference standard were conducted simultaneously with 130 HNC patients (age range 18–88 years, 94 males, UICC stages II–IV). FEES results were defined by the Functional Oral Intake Scale (FOIS), Penetration aspiration scale (PAS), and therapy-relevant dysphagia (TRD: PAS>Greater or equal>4 plus FOIS<less or equal>4). As clinical predictors, dysglossia, wet voice, abnormal voluntary cough, reduced mouth opening, limited tongue motility, limited tongue strength, and gag reflex were chosen. Dichotomized FraMaDys results (pass/fail), either in combination with clinical predictors or alone, were compared with the reference standard by correlations, ROC curves, and cross-tabulation. Results FraMaDys demonstrated the best sensitivity (97%) and specificity (87%) values for TRD, followed by FOIS and PAS. Corresponding values of the clinical predictors were low, with an average sensitivity of 39% and specificity of 77%. Only dysglossia, wet voice, limited tongue motility and strength correlated significantly with FOIS, PAS, and TRD. A combination of FraMaDys with predictors did not improve its quality. Conclusions Sensitivity and specificity of FraMaDys can be considered very high but they cannot be further improved by the chosen clinical predictors.

15F.04 ESOPHAGEAL DYSMOTILITY PATTERNS IN PATIENTS FOLLOWING TOTAL LARYNGECTOMY

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Introduction. Dysphagia in total laryngectomies is common and has been attributed primarily to pharyngeal dysfunction. At times, laryngectomees report symptoms suggesting esophageal dysfunction such as regurgitation or retrosternal bolus hold up. The aims of our study were to determine: a) the prevalence and characteristics of esophageal dysmotility following total laryngectomy, b) whether clinical history is sensitive to predict esophageal dysfunction, and c) the relationship between esophageal dysmotility and tracheoesophageal (TE) voice problems. Material & Methods. We studied 31 consecutive patients who had undergone total laryngectomy 1-12yrs prior. A clinical history was taken in a multidisciplinary clinic by gastroenterologists (IJC & PW) and a speech pathologist (JM) experienced in the evaluation of dysphagia. Esophageal high resolution manometry (HRM) was performed during 10 x 5mL saline swallows and the traces were assessed by Chicago Classification v3.0. Results. Of 31 eligible patients (74% male, age 49 - 90yrs), 29 were able to complete the assessment protocol. Only one patient had completely normal esophageal motility. Dysmotility patterns included: achalasia (1); esophagogastric junction (EGJ) outflow obstruction (1); diffuse esophageal spasm (1); other major peristaltic disorders (30%) and minor peristaltic disorders (9%). Discussion - The systematic review makes it clear that therapeutic exercise can help reduce pain, disability and the dynamics of cervical spine. Moreover, learning motor control of the head and neck allowed the eight people observed to recover oral feeding without aspiration for the entire length of the meal, data which may not be found through specific and sensitive tests limited to the time of analysis of the swallowing act.

15F.03 DYSPHAGIA AFTER POSTERIOR CRANIAL FOSSA SURGERY: DEFINITION AND PRACTICAL IMPLEMENTATION OF AN EVIDENCE-BASED TREATMENT PROTOCOL

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Introduction - Proneceptual cervical receptors have important and multiple connections to the vestibular and visual-auditory apparatus as well as to the central nervous system. The dysfunctions of these receptors, due to posterior cranial fossa surgery, may alter the normal afferents of sensorimotor control and therefore the postural system of head and neck. We performed a search of the current literature to analyze the correlations between postural alterations of the cervical tract and swallowing disorders resulting from a damage to the mixed cranial nerves after posterior cranial fossa surgery. We reported the results of the rehabilitation procedure following the G.Jull and D.Falla method in 8 patients who underwent posterior fossa meningioma surgical removal. Materials and methods - A search for scientific articles was conducted using online databases like MEDLINE, PEDro and Pubmed. Only clinical trials, meta analysis, randomised controlled trials and systematic reviews were investigated. Results - A total of 328 articles were identified in the research, 319 of which rejected because they did not meet the selection criteria. As a consequence, 9 randomised clinical trials (RCT) were analysed. Discussion - The systematic review makes it clear that therapeutic exercise can further improve.
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Poster Presentations

SATURDAY OCTOBER 15

ing TE puncture, 2 had EGJ obstruction and spasm, which are likely to be associated with poor esophageal clearance. Among the 20 TE voice users, a wide spectrum of disordered esophageal motility patterns was observed. Twelve of 20 TE voice users reported voice problems. However, no specific esophageal motor pattern appeared to correlate with TE voice problems. Conclusions. Peristaltic and EGJ dysfunction is prevalent in laryngectomees. Co-existent esophageal dysmotility should be considered when assessing laryngectomy patients presenting with dysphagia and/or with leaking TE puncture. The pathophysiology underpinning these phenomena is unproven, but pharyngo-esophageal neural damage and enteric neuropathy following surgery <plasmin> chemoradiation should be considered.

15F.05 COULD EATING ASSESSMENT TOOL-10 (EAT-10) BE A HELPFUL SCREENING TOOL FOR LONG-TERM RADIOTHERAPY-INDUCED DYSPHAGIA IN T1 GLOTTIS CANCER?

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Introduction: Oropharyngeal dysphagia is highly prevalent in head and neck cancer submitted to radiotherapy (RT). Current diagnostic and radiotherapeutic protocols try to preserve the essential organs in swallowing in head and neck cancer patients. The aim of this study is to determine if an early swallowing rehabilitation obtains better results on swallowing and quality of life items compared to late therapy. Methods: Prospective, single-blind, randomized controlled trial was carried out in a HNC patients. Two arms of treatment: before and after the beginning of radiotherapy intervention. Patients were evaluated at diagnosis and after radiotherapy. Main outcomes were QoL-test (European Organization for Research and Treatment of Cancer, QLQ C-30+QLQ H&N35) and Penetration-Aspiration Scale (PAS-Videofluoroscopic study) for swallowing severity. Average radiotherapy dose for risk swallowing organs were designed according to the guidelines of the RTOG. Results: 21 patients (16 males, mean age 59.76y).10patients were included in early-rehabilitation intervention and 11 in late-rehabilitation. During this period 4 patients died, one required a tracheostomy, two had a low adherence and one resigned. The average dose was 48, 61.7 and 45 Gy in the oral cavity, larynx constrictor muscles and jaw, respectively. No basal differences between groups for global health status. In QoLHNP3, marginal differences for pain subscore (p = 0.049) for early-rehabilitation. No differences in basal and end-RT data for PAS. Slightly penetrations in respiratory tract detected for both groups (PAS 3) at basal and deep-penetrations through vocal folds at end-RT (PAS 5) for both. 85.71% of all patients had a good adherence to rehabilitation program, interfered for acute toxicity (80.95% mucositis and 61.9% dermatitis grade <Greater or equal>2). Conclusion: Early-rehabilitation intervention seems to influence in pain subscore in QoL test, not in dysphagia severity at the acute phase of intervention.

15F.06 BENEFITS OF EARLY SWALLOWING REHABILITATION ON THE QUALITY OF LIFE AND SWALLOWING IN PATIENTS UNDERGOING HEAD AND NECK CANCER RADIOTHERAPY: A RANDOMIZED CLINICAL TRIAL.

REDYOR TRIAL.PRELIMINARY RESULTS

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Introduction: Current diagnostic and radiotherapeutic protocols try to preserve the essential organs in swallowing in head and neck cancer patients, but dysphagia and poor quality of life is a frequent sequela. The aim of this study is to determine if an early swallowing rehabilitation obtains better results on swallowing and quality of life items compared to late therapy. Methods: Prospective, single-blind, randomized controlled trial was carried out in a HNC patients. Two arms of treatment: before and after the beginning of radiotherapy intervention. Patients were evaluated at diagnosis and after radiotherapy. Main outcomes were QoL-test (European Organization for Research and Treatment of Cancer, QLQ C-30+QLQ H&N35) and Penetration-Aspiration Scale (PAS-Videofluoroscopic study) for swallowing severity. Average radiotherapy dose for risk swallowing organs were designed according to the guidelines of the RTOG. Results: 21 patients (16 males, mean age 59.76y).10patients were included in early-rehabilitation intervention and 11 in late-rehabilitation. During this period 4 patients died, one required a tracheostomy, two had a low adherence and one resigned. The average dose was 48, 61.7 and 45 Gy in the oral cavity, larynx constrictor muscles and jaw, respectively. No basal differences between groups for global health status. In QoLHNP3, marginal differences for pain subscore (p = 0.049) for early-rehabilitation. No differences in basal and end-RT data for PAS. Slightly penetrations in respiratory tract detected for both groups (PAS 3) at basal and deep-penetrations through vocal folds at end-RT (PAS 5) for both. 85.71% of all patients had a good adherence to rehabilitation program, interfered for acute toxicity (80.95% mucositis and 61.9% dermatitis grade <Greater or equal>2). Conclusion: Early-rehabilitation intervention seems to influence in pain subscore in QoL test, not in dysphagia severity at the acute phase of intervention.

15F.07 DYSPHAGIA IN MYASTHENIA GRAVIS: CURRENT PERSPECTIVES

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Introduction: Myasthenia Gravis (MG) (Fig. 1) is a neuromuscular autoimmune disorder of unknown aetiology characterised by a deficit in transmission of nerve impulses to the muscles. Main symptoms are muscle weakness and fatigability. The ocular muscles are the
most frequently affected, but also bulbar, pelvic, limb, or respiratory muscles can be impaired. In the case of bulbar muscle involvement, speech difficulties and dysphagia are possible consequences. The aim of this paper is to increase understanding on the impact of MG on eating and swallowing. Material & Methods: A search of electronic databases, combined with a search of grey literature, was completed. The search period was from inception to March 2016. Studies combining dysphagia and MG in all languages were included. Results: Patients generally present with fatigue at the end of meals, difficulties swallowing large volumes and a weak cough. Typical oromotor symptoms include weakness of lips, tongue, soft palate, velopharynx, and masticatory muscles, manifesting in drooling, leakage of fluids, impaired bolus preparation or transport, nasal regurgitation, premature spillage, chewing difficulties, and a reduced bite force. Other characteristics are reduced tongue base retraction, delayed pharyngeal swallow, delayed or impaired laryngeal elevation, impaired airway protection, and upper oesophageal dysfunction. Risk of aspiration is reported to be about 35%. Management of dysphagia includes mainly adaptations to diet. Enteral feeding may be required. Rehabilitation exercises are often inappropriate due to muscle fatigability. Conclusion: MG commonly results in oral, pharyngeal and oesophageal dysphagia, with incidence of pharyngeal difficulties being the highest. Dysphagia can be the only initial symptom or the only overall clinical manifestation of MG. This highlights the importance for disciplines involved in dysphagia management to be aware of this disease.

Abstract Book

15F.08 DETERMINING A CLINICALLY IMPORTANT DIFFERENCE IN WATER SWALLOW TEST VALUES FOR HEAD AND NECK CANCER PATIENTS
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Introduction: The 100 mls timed water swallow test (WST) is a simple clinical measure of swallowing performance and may be used as a screen for aspiration. Currently it forms part of a panel of outcomes in three head and neck cancer multi-centre studies. A minimally clinically important difference (MCID) refers to the minimum change in an outcome measure to be of importance to a patient. The objective of this study was to determine the MCID of the WST in head and neck cancer. Materials and Methods: 239 head and neck cancer patients (79.9 % male; mean age 63.3) had a WST pre-treatment and at 3, 6 and 12 months post treatment. The WST was used to measure swallow capacity (millilitres per second (mls/sec)) and swallow volume (millilitres per swallow (mls)). The distribution and anchor based methods were used to calculate the MCID. Results: A total of 453 water swallow assessments were performed during the study period. For the distribution based method, the standard deviation for swallow capacity and volume respectively were 8.6 mls/sec and 8.4 mls. The MCID was 4.3 mls/sec and 4.2 mls respectively. Work is underway to derive a MCID via the anchor method, using diet scores and will be presented. Conclusions: This is the first paper to report a MCID for the WST. The WST is a cheap and simple test for clinical and potentially research purposes.

15F.09 EVALUATION OF USEFULNESS OF VIDEOFLUOROSCOPY AND ENDSCOPY IN PLANNING AND MONITORING PATIENTS WITH SWALLOWING DISORDERS AFTER HEAD AND NECK CANCER WITH FREE FLAP RECONSTRUCTION – PRELIMINARY RESULT
J.C.H. Chmielewska1; B.J. Jamroz2; M.M. Milewska3, E.S.B. Sielska-Badurek4; K.J. Niemczyk1 / Medical University of Warsaw
Introduction: Surgical treatment for advanced head and neck tumors can impact on patient’s functionality. Mostly, extensive resections with multiple structures involved causes functional difficulties and poor quality of life. Among the postoperative risks are: stenosis of the hypopharynx, salivary fistula and/or pharyngocutaneous and infections. Regarding tongue and larynx tumors, swallowing and communication can be severely damaged, as well as the complete removal of these organs (total glasco-laryngectomy) has profound consequences for the patient. AIM: To describe swallowing and communication outcomes of four patients submitted to total glasco-laryngectomy. MATERIAL & METHODS: This is...
a four cases report, retrospective study. The patients were referred to the Speech Language Pathology (SLP) Department to initiate rehabilitation after the surgical procedure and informations about medical reports, swallowing and speech evaluation and videofluoroscopy were collected. All patients underwent rehabilitation therapy for swallowing and at least one videofluoroscopy evaluation of swallowing. RESULTS: After rehabilitation, regarding swallowing, two patients had nasogastric tube removed with exclusive oral diet with different consistencies (liquid to soft diet). They reached an intelligible speech by using of laryngeal vibrator. The other two patients had postoperative complications, one because of the presence of a fistula and the other because esophageal stricture. These complications limited the swallowing and communication rehabilitation process. CONCLUSIONS: Swallowing and speech results in patients submitted to total glosso-laryngectomy are variable, ranging from exclusive oral to tube feeding, depending on clinical complications. SLP rehabilitation is of fundamental importance to improve quality of life. More studies are needed to better understand the rehabilitation process.

15F.11 CONTENT VALIDATION AND RELIABILITY OF THE DANISH M.D. ANDERSON DYSPHAGIA INVENTORY (MDADI) IN PATIENTS WITH HEAD AND NECK CANCER

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Introduction: Dysphagia is the most common sequela to head and neck cancer (HNC) treatment and is associated with significant effects on health-related quality of life (QoL). There is lacking Danish tools to measure the impact of HNC treatment on dysphagia-specific QoL, as such the M. D. Anderson Dysphagia Inventory (MDADI). The aim of this study was to translate MDADI into Danish and to content validate and reliability test the Danish version. Material & Methods: A formal forward-backward translation was performed according to international guidelines. A pre-final version was tested on 14 individuals - who all finished HNC treatment - through structured one-on-one interviews according to EORTC guidelines. Reliability tests are ongoing. Minimum 50 HNC-patients in a self-perceived stable condition will perform test-retest with one week intervals. Internal consistency is investigated for each sub-domain (global, emotional, functional and physical) by Cronbach’s Alpha (<alpha>), requiring <alpha>>0.7. A paired-sample t-test will calculate the mean difference between test and re-test. Absolute and relative reliability is assessed by standard error of measurement and intra-class correlation coefficient (ICC), respectively, with ICC <Greater or equal>0.7 considered acceptable. Floor and ceiling effects will be studied as proportions of the most extreme summary scores. Results: In the translation process four extra questions were added to the original 20 questions, as inspired by the revised Swedish MDADI version 1.4. All 24 questions were content validated. Few minor changes were made to improve cultural adaptation. After a total of 14 interviews a final translation was approved by the original MDADI developer. The test-retest reliability remains to be tested. So far 45 patients have returned both questionnaires. Conclusion: The Danish MDADI is valid in its content among the target population. Reliability remains to be tested but is ongoing. Future construct validity tests would be beneficial.

15F.12 THE PREVALENCE OF OROPHARYNGEAL DYSPHAGIA IN ADULTS PRESENTING WITH TEMPOROMANDIBULAR DISORDERS ASSOCIATED WITH RHEUMATOID ARTHRITIS: EXAMINING THE EVIDENCE

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Introduction: Temporomandibular disorders (TMDs) are the most frequent non-dental orofacial pain disorders. They are conditions associated with pain and dysfunction of the temporomandibular joint (TMJ) and associated structures. TMDs are the second most common musculoskeletal/neuromuscular disorders, and the most commonly reported signs and symptoms include pain (94.1%), otological symptoms (82.4%), headache (79.3%) and TMJ discomfort/dysfunction (75%) (Cooper & Kleinberg, 2007). These features are often accompanied by joint movement restrictions, joint sounds and dental wear. TMDs may be related to rheumatoid arthritis (RA). Little is known about the prevalence of RA-related TMDs. These TMDs are important to research as pain and movement restrictions may result in oropharyngeal dysphagia, with subsequent repercussions on quality of life (QoL). Materials and Methods: A systematic search of the literature was completed. Electronic databases, grey literature, and reference lists of included studies were searched from inception to February 2016, with no date or language restriction. Studies reporting the frequency of oropharyngeal dysphagia in adults presenting with TMD and RA were included. Study eligibility was assessed by 3 independent reviewers. Methodological quality of included studies was assessed by 2 independent reviewers using an adapted JBI tool and the Down’s and Black Tool. Meta-analysis of findings was conducted. Results: This search yielded a total of 19 eligible studies (Fig. 1). Typical difficulties experienced by patients with
A correlation between swallowing abnormalities (SA) and the abnormalities was judged by bedside examination and modified barium at our center between 2010 and 2013. The prevalence of swallowing abnormalities in post lung transplant patients was 24.63% (Fig 2.) and masticatory pain (29.97%) and fatigue (21.26%), among others. Study quality was typically deemed to be moderate to good. Conclusions: TMJ difficulties in RA frequently result in oropharyngeal dysphagia, with potential QOL repercussions. Research is required to address the assessment and treatment of swallowing difficulties in RA.

15F.13 THE PREVALENCE, POSSIBLE RISK FACTORS AND THE OUTCOME OF SWALLOWING ABNORMALITIES IN PSY LUNG TRANSPLANT PATIENTS
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Title: The prevalence, possible risk factors and the outcome of swallowing abnormalities in post lung transplant patients.
Purpose: To study the prevalence, possible risk factors and the effect of post lung transplant swallowing abnormalities in lung transplant patients. Methods: Retrospective chart review of patients who underwent lung transplant at our center between 2010 and 2013. The prevalence of swallowing abnormalities was judged by bedside examination and modified barium swallow. A correlation between swallowing abnormalities (SA) and the duration of mechanical ventilation (DMV) and need for tracheostomy (Tr) was calculated. Those with SA were compared with patients without SA to assess the effect of SA on Length of hospital stay (LOS), episodes of acute rejection (AR) and episodes of pneumonia requiring hospitalization (PRH) in the first year post transplant. Summary of Results: Total of 50 lung transplants were performed during the study period. The data was available in 42. The prevalence of SA was 75.68%. All patients recovered from SA. The average duration of mechanical ventilation in pts with and without SA was 19 and 8.1 days (p=0.16). The number of pts requiring tracheostomy in SA group was 9(32%) vs 1(11%) without SA (p= 0.21). The pts with SA stayed in hospital for an average of 46.5 vs 32.1 days (p=0.21). The ICU length of stay was 23.5 days in SA group vs 12.7 in non SA group (p= 0.16). The number of acute rejection were 11(39%) and 1(11%) and pneumonia requiring hospitalization 8(86%) in SA group and 19(67%) in no SA group. Conclusion: SA was common in post lung transplant patients. With speech therapy intervention the SA recovered in all patients. In our small study the DMV and Tr. did not significantly affect the prevalence of SA. Similarly there was no difference in the LOS, AR and PRH in patients with SA.

15F.14 RELATIONSHIP BETWEEN SWALLOWING-RELATED QUALITY OF LIFE AND FEES IN PATIENTS WHO UNDERWENT OPEN PARTIAL HORIZONTAL LARYNGECTOMY
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Introduction. The purpose of this study was to determine the relationship between swallow-specific quality of life (QOL) using the MD Anderson Dysphagia Inventory (MDADI) and the swallowing function using a standardized fiber-optic endoscopic evaluation of swallowing (FEES) protocol in patients who underwent open partial horizontal laryngectomy (OPHL) because of laryngeal cancer. Material and Methods: Ninety-one patients who underwent OPHL were enrolled in the study; 31 underwent type 1 OPHL, 32 type 2 and 28 type 3. Patients completed the MDADI questionnaire and underwent a standardized FEES examination. Penetration aspiration scale (PAS), pooling score (P-SCORE), piecemeal deglutition and Dysphagia Outcome and Severity Scale (DOSS) were used to quantitatively analyze swallowing. Descriptive statistics and 1-way analysis of variance tests were carried out. Results. For all FEES variables, the observer agreement level between two observers was sufficient. No difference among the 3 type of OPHL was found. These preliminary results show statistically significant mean differences of MDADI subscales between the ordinal scale levels for P-SCORE and DOSS score, but not for PAS and piecemeal deglutition. Conclusions. The MDADI questionnaire can be used to assess the impact of dysphagia on the patients’ health-related QOL after OPHL. Despite clear trends, it remains unclear if the MDADI questionnaire can be used as an indicator for the severity of oropharyngeal dysphagia.

15F.15 EVALUATION OF DYSPHAGIA IN PATIENTS TREATED WITH CT+RT VERSUS SURGERY AND ADJUVANT THERAPY FOR OROPHARYNGEAL CANCER
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Introduction: patients with oropharyngeal cancer usually undergo radio- and chemotherapy as a first line treatment even though surgical approach with adjuvant therapy in advanced stages is expected by international guidelines. In the past decades surgical treatment was prevalent but today, due to the new discoveries concerning the anti-oncological role of HPV in oropharyngeal cancer, conformational radiotherapy with concomitant chemotherapy is preferred. Material and methods: among our clinical records of oropharyngeal cancer with a 5 years negative follow up, we selected 11 patients treated with rt + ct (group A) and 6 patients treated with surgery and adjuvant treatment (group B). Patients were evaluated by self-administered questionnaires (H & N 35 and H & N C30). The degree of dysphagia was evaluated in FEES through the use of DOSS scale. Results: 81.8% of group A patients and 83.3% in group B. Smokers were 54.5% in group A and 66.7% in group B respectively. The DOSS scale was significantly higher in group A patients (p = 0.0065; mean value of 6.7 versus 6 ). The items evaluated with the H & N C30 questionnaire were not significantly different in the two groups, while only a few items of the questionnaire H & N 35 (items D49,52,53,54,5,59, 62) were significantly higher in the group B. Conclusions: treatment with radiotherapy and chemotherapy is less invasive ensuring a better quality of life and a better state of swallowing (measured with the DOSS scale in FEES) therefore it should be the treatment of choice whenever the same oncological outcomes are expected.

15F.16 AGREEMENT BETWEEN THE VOLUME VISCOSITY SWALLOW TEST AND VIDEODUOFLUOSCOPY FOR DETECTING LONG-TERM RADITHERAPY-INDUCED DYSPHAGIA IN T1 GLOTTIS HNC PATIENTS
Introduction: Radiotherapy in head and neck cancer provides successful treatment results with good local control rates and high survival, but it has been accordingly detected the presence of long-term deglutition problems. The volume-viscosity swallow test (V-VST) has proved to be a sensitive clinical screening method to identify patients with dysphagia in subacute stroke patients. The aim of this study is to evaluate the clinical screening capacity of V-VST for oropharyngeal dysphagia. Material and Methods: Cohort study of 23 T1 glottis cancer patients. Deglutition was evaluated by V-VST and VFS. In V-VST, piecemeal deglutition and oropharyngeal residue were considered signs of impaired efficacy while cough, fall in oxygen saturation and voice changes were considered signs of impaired safety. Cohen Kappa was calculated for concordance between V-VST results and VFS results. Results: Agreement for oral efficacy, oral safety, pharyngeal efficacy and pharyngeal safety respect VFS was poor or slight with lower kappa values (from 0.011 to 0.222). Conclusions: The concordance between V-VST and VFS was poor or slight with lower kappa values (from 0.011 to 0.222).

15G.01 AGREEMENT BETWEEN INSTITUTIONALIZED OLDER ADULTS AND CAREGIVERS ON CHOKING COMPLAINT
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Introduction: Choking is often referred as a sign of a deglutition disorder, especially in older adults living in nursing homes. Older adults can underestimate negative health status while the perception of the caregivers tends to be more negative. The aim of this study was to verify the agreement between self-reported choking by institutionalized older adults and choking reported by caregivers. Material and Methods: We investigated 96 older adults and their respective caregivers from 10 Brazilian nursing homes. Data about choking was based on a single question to the older adult (“Do you choke when you swallow?”) and a single question to the caregiver (“Does he/she choke when he/she swallow?”). Kappa coefficient was used for interobserver statistical analysis. The level of significance was 5%. Results: The majority of the participants was female (74.4%) with a mean age of 79.68 (± 7.92) years. Bivariate analysis indicated a statistic association between choking and voice problems (p<0.001), gastroesophageal reflux (p = 0.027) and depressive symptoms (p = 0.036). Multivariate analysis revealed only depressive symptoms (prevalence ratio = 2.07; 95% confidence interval = 1.03-4.14) as an associated factor with choking in the studied population. Conclusions: Prevalence of choking in older adults with preserved cognitive function living in nursing homes is two times higher when depressive symptoms are present. Health care managers and multidisciplinary team involved in the nursing home setting must be alerted on the association between deglutition disorders and psychosocial symptoms.
15G.03 THE RELATIONSHIP BETWEEN SWALLOWING FREQUENCY AND FUNCTION IN THE ELDERLY

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Purpose: Aspiration pneumonia is common among the elderly, and, thus, its prevention is an important issue. Therefore, detecting predicting a decrease in swallowing function based on physiological phenomena are considered to be useful. Since swallowing is an aspiration protection mechanism that processes a bolus of food, saliva, and secretions from the pharynx to the esophagus, the frequency of swallowing may be an indicator of swallowing function. We previously reported that swallowing frequency was lower in the elderly than in young individuals. However, the relationship between swallowing frequency and dysphagia currently remains unclear. Therefore, we herein examined swallowing frequency in the elderly and compared the following conditions among the results obtained: 1) differences among nutrition methods and 2) the presence or absence of a history of pneumonia. Materials and Methods: Thirty elderly patients admitted to a hospital participated in this study. We compared swallowing frequencies between: 1) 17 patients who take nutrition orally (Group O) and 13 who did not develop pneumonia. Measurements of swallowing frequency were performed using a laryngeal microphone. This measurement was set to one hour and all participants were directed not to eat or drink during the measurement. Results: The average swallowing frequency was significantly lower in group T (8.0±7.3) than in group O (19.6±12.7). In Group O, the average swallowing frequency was significantly lower in group T than in group O during the measurement. Conclusion: Swallowing disorders’s occurrence was correlated with each group (table 2). 

15G.04 SD-SCALE : VALIDATION FOR EHPAD’S RESIDENTS

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Background: Dysphagia’s prevalence in people living in Establishments of Accomodation for Dependant Old Persons (EHPAD in France): 30 to 40% and morbidity is 4400 deaths a year in France. Today, there is few tests to detect swallowing disorders. SD-SCALE was created for a geriatric population in hospital in 2007 by Philippe Penigault, speech therapist. Objective: To identify the risk of dysphagia among all of the people living in Establishments of Accomodation for Dependant Old Persons from clinical data in medical records. Material & methods: We used the french version of SD-Scale. The original title is FR-Echelle (table 1). Notice clinical data in patient’s files. Compare the results with those from the study of P. Penigault. Nursing staff report the swallowing disorders really done. Criteria of inclusion: all of the residents living in Establishments of Accomodation for Dependant Old Persons with more than 60 years old. Criteria of exclusion: ENT surgery or stroke in less than 3 months. Results: 501 files were evaluated: 101 (20.4%, P group) patients with swallowing disorders (S group - 399.5%) and 210 patients without swallowing disorders (N group - 061.5%). Conclusion: SD-Scale shows greater potential to identify swallowing disorders. It allows to ask a complete exam by a speech therapist or to monitor risky patients. 

15G.05 RADIOLOGIC EVALUATION OF OLDER ADULT’S SWALLOW : OUR 11-YEARS EXPERIENCE IN PRESBYESOPHAGUS AND PRESBYPHAGIA

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Introduction: We made a retrospective evaluation of 496 outpatients over 67 years old with primary presbyphagia undergone videofluoroscopy study (VFSS) at our Radiology Department over a period of 11 years (2004-2014) to assess prevalence of abnormalities of oral and pharyngeal phases of swallowing in patients over 67 years old with presbyesophagus compared with patients over 67 years old without presbyesophagus. Materials and Methods: The patients were examined with a standard technique using a digital fluoroscopy system, evaluating the alterations of the oral, pharyngeal and esophageal phases. We compared data of patients with and without presbyesophagus using Chi-square test (p<0.05). Results: We identified 101 (20.4%, P group) patients with presbyesophagus and 395 patients without presbyesophagus, in particular 201 patients with oral and/or pharyngeal phase alterations of swallowing (N group - 40.5%) and 155 patients with normal swallowing (S group - 398.5%).
group - 31.2%) but with hiatal hernia and/or gastro-esophageal reflux. The differences between P and N groups about oral phase’s alterations, aspiration and cricopharyngeal hypertonia and simultaneous presence of oral and pharyngeal phase’s alterations were not statistically significant. Prevalence of penetration, pharyngeal stasis, sliding jatral hernia were statistically significant, so their prevalence is higher in N group than in P group. The difference about gastro-esophageal reflux was statistically significant among our three groups and it is higher in N and S groups.

Conclusions: Our data confirm high prevalence of oral, pharyngeal and esophageal phases of swallowing’s alterations in dysphagic patients over 67 years old with primary presbyphagia. Our results suggest that patients with presbyosyphagous should be considered an its own right category among patients with presbyphagia. VFFS is fundamental in the diagnosis with presbyesophagus should be considered an its own right category among patients with presbyphagia. VFFS is fundamental in the diagnosis of these pathologic conditions.

156.06 PERCEPTION OF FEEDING PHENOMENON AND ORGANOLEPTIC PROPERTIES OF FOOD BY A GROUP OF ELDERLY PEOPLE WITH PRESBYPHAGIA

V. García1; R. Peña1; L. Segura1; Ma.González1; M. Del Campo1; A. Medina1 1Universidad del Bío Bío Background: Feeding phenomenon perception in elderly people is affected by physiological (sensory) and not physiological (psychological and social) changes. International researches about this topic are limited and not representative of the Chilean population. Purpose: To know the perception of feeding phenomenon in elderly with presbyphagia through physiological and not physiological factors and organoleptic properties of the food. Methodology: Qualitative study of phenomenological design. Eight older adults with presbyphagia were interviewed at the Practical Activities Center of the Universidad del Bio Bio (sampling saturation). The results of the interview were processed by axial coding in two levels: (1) building codes (by quote of the interviewed person) and memos (concepts of researchers); and (2) selective coding (by integrating the codes in families) using the constant comparisons method. Results were analyzed by Atlas.ti (version 6.0) software. Results: Sensory impairment does not affect the feeding. Social and psychological factors are involved in the eating process. The mood does not affect the desire to eat however the disease affects this process. Semi solid viscosity, sweet taste and intense colors (organoleptic properties) of food and hot temperature influence the perception of the elderly during feeding. Shape of the food and specific color were not important. Conclusion: Physiological and not physiological factors and organoleptic properties of food affect the perception of the feeding phenomenon in elderly people with presbyphagia. Finally, feeding of elderly people is influenced by their acquired eating habits, geographical location and physical abilities.

156.07 A SURVEY OF THE ADMINISTRATION OF DRUGS THAT MAY INFLUENCE THE EATING AND SWALLOWING FUNCTIONS OF THE ELDERLY IN NEED OF NURSING CARE

N. Kaneke1; K. Nohara1; T. Sakai1 / Osaka University Dental Hospital [Purpose] In Japan, the population aging rate is 26.7% at present, and the number of elderly in need of nursing care has exceeded 5,690,000. The administration of drugs is essential for their stable lives. However, some elderly people with impaired eating and swallowing functions due to aging and disorders take drugs that may cause aspiration. Among other drugs, antipsychotics, which are dopamine antagonists, may increase the risk of aspiration. A survey was conducted to examine the status of the administration of dopamine antagonists, which may cause extrapyramidal symptoms and decrease eating and swallowing functions. [Methods] The subjects were 83 elderly people living in a nursing home (mean age: 85.0 years old) (Group A), 83 residents of a healthcare facility for the elderly in need of nursing care (mean age: 84.0 years old) (Group B), and 92 elderly people living at home (mean age: 80.2 years old) (Group C). Surveys of the types and numbers of drugs administered were conducted based on the prescriptions. The numbers of drugs taken by each subject were compared among the three groups. Based on the results of the surveys, to examine the status of the administration of dopamine antagonists as antipsychotics and antiemetics. [Results] The numbers of the types of drugs taken by each elderly person in Groups A, B, and C were 7.1±3.7, 4.5±2.9, and 6.5±3.7, respectively. The number for Group B was significantly smaller (P<0.05). The rates of elderly people who took antipsychotics in Groups A, B, and C were 20.5, 16.9, and 14.1%, respectively. The rates of elderly people who took antiemetics in Groups A, B, and C were 6.0, 0, and 3.3%, respectively. Dopamine antagonists were taken by 17.1% of the total number of subjects. [Conclusions] It is necessary to help the elderly reduce the number of drugs they take, and inform care providers of the risks of aspiration/aspiration pneumonia.

156.08 INTERRATER RELIABILITY OF THE VOLUME VISCOSITY SWALLOW TEST IN ACUTELY ADMITTED OLDER MEDICAL PATIENTS

D. Melgaard1; K. Sondergaard2; S. Warming3 / 1Department of Physical and Occupational Therapy and Center for Clinical Research, North Denmark Regional Hospital; 2Department of Physical and Occupational Therapy, Copenhagen University Hospital Herlev and Gentofte; 3Department of Physical and Occupational Therapy, Copenhagen University Hospital Bispebjerg Frederiksberg. Introduction: Oropharyngeal dysphagia (OD) affects 51% of institutionalized older persons. OD is related to age and frailty and its complications include pneumonia, malnutrition, dehydration, social isolation, and death. In spite that screening for OD internationally is recommended, elderly patients are currently not systematically screened for OD in Denmark. OD can be diagnosed by various subjectively interpretable
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15G.09 CERVICAL OSTEOPHYTOSIS AND DYSPHAGIA

R. Ronchin1; V. Corazzi1; G. Chiarello1; R. Merlo1; A. Pastore1 / ENT Department, University Hospital of Ferrara.

INTRODUCTION Cervical osteophytosis is a relative common disease in the elderly.1,2 When symptomatic, cervical osteophytes can determine dysphagia (in 17-25% of cases) as a consequence of pharyngooesophageal compression.2 The surgical therapy can resolve the dysphagic symptoms. Aim of this study is to describe the characteristics of these dysphagic patients and define the role of the logopedic therapy in the rehabilitation of a physiologic swallowing in patients who cannot be surgically treated (because of age and/or comorbidities).

MATERIAL & METHODS

507 patients were evaluated in our Ambulatory of Swallowing Disorders between 2010 and 2014. 4 out of 507 (0.8%) patients were affected by dysphagia caused by cervical osteophytes. All patients underwent a protocol of phoniatric-logopedic evaluation of dysphagia (modified from Cot and Dshernais’s, 1985), consisting in anamnestic-objective data collection, clinic-logopedic swallowing examination and fiberoptic endoscopic evaluation of swallowing (FEES). RESULTS 43 men and 1 woman (average age 84); 2 patients reported dysphagia to solids, 1 to liquids, 1 to both; 2 patients described a sense of hypopharyngeal foreign body and 2 of hypopharyngeal blocked bolus after swallowing. The diagnosis of osteophytosis was radiologic. During FEES, 2 patients didn’t manifest penetration/inhaling with all the consistencies. A logopedic counseling was performed about hygienical-dietary indications: homogeneous semi-liquid/semisolid consistencies, adequately slick and cohesive, thickened liquids and appropriate posture were recommended. CONCLUSIONS None has referred dysphagia after the suitable hygienical-dietary indications. In a dysphagic elderly with cervical osteophytosis it is always recommended a focused logopedic intervention. To the best of our knowledge, in current literature there aren’t specific treatment programs in this sense: our study could represent a starting point in order to elaborate adequate rehabilitative models.

15G.10 CREATION AND VALIDATION OF A 9-ITEM DYSPHAGIA SCREENING TEST FOR GERIATRIC UNITS

A.S. VanderMaren1; N. Guerry1; S. Delaere1; G. Séverin1; S. Carlot1; N. Roger1 / SLP, Hôpital Erasme

Introduction: Elderly patients are recognised to be at increased risk of oropharyngeal dysphagia (OPD), the causes of which are multifactorial.1 The prevalence of OPD in the elderly (age >65). Methods: A hospital electronic database was searched for patients >65 years referred for assessment of suspected dysphagia between May 2013 and January 2014. Exclusion criteria were age < 65 years or concurrent OPD due to: acute intracranial event, space occupying lesion or trauma. Data were collected on age; sex; co-morbidities; delirium; existing OPD; body mass index (BMI) on admission + discharge; sepsis; type of sepsis; microbiology; diagnosis of sepsis made before OPD; recovery of OPD; mortality; aspiration and medication potentially contributing to OPD. Sepsis was defined as a systemic inflammatory response syndrome with a clinical suspicion of infection. Results: 300 of 1470 patients met the inclusion criteria. The prevalence of sepsis induced OPD was

15G.11 INVESTIGATION OF THE ASSOCIATION BETWEEN SEPSIS AND OROPHARYNGEAL DYSPHAGIA IN A HOSPITALISED ELDERLY POPULATION

A. Sasegbon1; P. Dark1; L. O’Shea1; S. Hamdy1 / Salford Royal Hospital

Introduction: Elderly patients are recognised to be at increased risk of oropharyngeal dysphagia (OPD), the causes of which are multifactorial. Methods: A hospital electronic database was searched for patients >65 years referred for assessment of suspected dysphagia between May 2013 and January 2014. Exclusion criteria were age < 65 years or concurrent OPD due to: acute intracranial event, space occupying lesion or trauma. Data were collected on age; sex; co-morbidities; delirium; existing OPD; body mass index (BMI) on admission + discharge; sepsis; type of sepsis; microbiology; diagnosis of sepsis made before OPD; recovery of OPD; mortality; aspiration and medication potentially contributing to OPD. Sepsis was defined as a systemic inflammatory response syndrome with a clinical suspicion of infection. Results: 300 of 1470 patients met the inclusion criteria. The prevalence of sepsis induced OPD was...
17% (50 patients). The median age was 80 years. The interquartile age range was 12.5 years. 60% were male and 40% female. Admission BMIs ranged from 15.8 to 34.3 with a median of 21.2. Common co-morbidities included: dementia and diabetes. The majority (76%) failed to recover swallowing, 14% aspirated and 36% died. The most common types of sepsis were: chest (48%) and mixed (26%). Confirmatory microbiology was found in 38%. Factors contributing to dysphagia included delirium (18%). However, 14% of patients had sepsis induced dysphagia without any established risk factors.

Conclusion: The prevalence of sepsis induced dysphagia is significant (17%) and should be considered in any new onset aspiration event in older patients. Sepsis should be recognised as a major factor in the decompensation of swallowing and OPD in the elderly which rarely recovers has increased mortality and might be considered a geriatric syndrome for which clinicians should be vigilant.

15G.12 IS EAT-10 AN ACCURATE TEST FOR SCREENING SWALLOWING DISORDERS IN OLDER PATIENTS IF FULFILLED BY CAREGIVERS?

C. Venturini; P. Orlandoni; N. Jukic Peladic; C. Cola; N. Giorgini; D. Fagnani; D. Sparvoli; R. Basile

Introduction: Unless dysphagia results from an acute event, its development in older patients (pts) is most likely identified at mealtime by caregivers. Consequently, the availability of a simple, quick and easy to use case-finding tool for caregivers (CGs) would be of primary importance. The aim of this study was to assess whether the Italian Eating Assessment Tool (I-EAT 10) can be functional for that purpose.

Material & Methods: The study was performed from January 2016 to March 2016 at INRCA Geriatric Hospital –Ancona (Italy). Data on overall clinical conditions and nutritional status of 38 out hospital pts (average age 79±11.64 years; 63% M, 37% F), who were assessed for swallowing difficulties by physical therapist of Clinical Nutrition Unit, were gathered. During visits CGs were invited to fill out the I-EAT 10. Sensitivity and specificity of I-EAT 10 used by CGs were assessed.

Results: Pts assessed for Dysphagia were mostly neurologic (85.9%), 11.1% had pressure ulcers, 50% sarcopenia, 58% were classified as malnourished after the nutritional assessment (64.7% according to Body Mass Index; < 21.34% according to Unintentional Loss of Weight (ULW) in last year, mean albumin level was 3.56±0.67; mean prealbumin level was 18.3±8.01). According to CG’s answers, 82% of pts had the I-EAT 10 score < Greater or equal > 3 and were at risk of Dysphagia. According to clinical evaluation 55% of pts had Dysphagia, mostly for liquids (Dysphagia Outcome and Severity Scale (DOSS) < 6). When filled in by caregivers the I-EAT 10 tool was found to be very sensitive (91.65%) - i.e. able to identify pts with disease - but it had very low specificity (31.25%) - i.e. the ability to identify correctly pts. without disease.

Conclusions: Further studies on larger populations should be performed in order to understand whether the I-EAT 10 can be considered an accurate tests even for CGs or other tools for CGs should be searched for.

15G.14  TRIPLE ADAPTATION OF HOME COOKING FOR OLDER PEOPLE WITH OROPHARYNGEAL DYSPHAGIA

A. Costa; A. Martin; E. Roura; M. Puig-Pey; P. Clavé

Background: Among older patients hospitalized for acute diseases, we found 47.4% presented oropharyngeal dysphagia and 30.6%, malnutrition. Dysphagia was an independent risk factor for sarcopenic malnutrition. Aim: To develop a nutritional plan for older persons with OD according to a triple adaptation of home cooking: a) rheological adaptation (texture and viscosity), b) nutritional adaptation (calories and proteins), and c) organoleptic adaptation (taste, odor) to facilitate compliance with the diets and improve deglutition.

Methods: Diets had to be easily made in patients’ homes using common ingredients. Texture adaptation followed the descriptors of the British Dietetic Association (BDA) and fluids, the recent white paper of the European Society for Swallowing Disorders (ESSD). Nutritional adaptation depended on the nutritional status of the patients and ensured high nutritional density in a small volume. Organoleptic adjustments followed the Mediterranean diet according to Alicia Foundation. Results: We developed a plan based on a) texture modification using C (thick purée) and E (fork-mashable) textures and fluid adaptation with nectar and spoon thick viscosities. b) Caloric-protein and hydric needs were established at 1750 ±1% kcal/day, 71.4-107.1g protein/kg weight/day and 1750 ml water/day in patients with MNA<23.5; and 1980 ±1% kcal/day, 97g protein/kg weight/day and 1500ml water/day in malnourished patients. c) The organoleptic adaptation aimed at improving taste and appearance. Diets were prescribed according to the results of chewing assessment, VVST and MNA. Conclusions: It is possible to develop diets with a triple adaptation of home cooking for older people with OD. This may improve the nutritional status and overall health of patients with OD.
In six patients that underwent assessment of the dietary nutritional status, one person was diagnosed with malnutrition, and two presented risk of malnutrition. Conclusions: This study found dysphagia in patients with chronic cough and support the need for FEES to be utilized in these patients. Further research in more patients is needed.

<table>
<thead>
<tr>
<th>Puree consistency</th>
<th>Liquid</th>
<th>Solid food</th>
</tr>
</thead>
<tbody>
<tr>
<td>premature swallowing</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>multishallowing</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>penetration</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>aspiration</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>retention</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1. Swallowing patterns in FEES.

**15G.15 FLEXIBLE ENDOSCOPIC EVALUATION OF SWALLOWING FOR ASSESSMENT OF PATIENTS WITH CHRONIC COUGH – PRELIMINARY RESULTS**

B. Jamróz¹; M.M. Milewska¹; J.C. Chmielwska¹; M.L. Lachowska¹; K.N. Niemczyk¹ / ¹ENT Department of Warsaw Medical University; ²Department of Human Nutrition, Medical University of Warsaw

Objectives: Patients with chronic cough require multidisciplinary approach. The purpose of this study was to assess dysphagia as a risk factor for chronic cough. Material and methods. Thirty patients hospitalized in the Department of Pulmonology were included in this study. All patients completed EAT 10 and SEM questionnaires and underwent water swallowing screening test (5, 10, 20, and 90 ml) and fiberoptic endoscopic evaluation of swallowing (FEES). Six patients agreed in this study. All patients completed EAT 10 and SEM questionnaires and underwent water swallowing screening test (5, 10, 20, and 90 ml) and fiberoptic endoscopic evaluation of swallowing (FEES). Six patients agreed

In water swallowing test, for 5 ml of water two (6.66%) participants achieved positive score, for 10 ml six (20%), for 20 ml nine (30%), and for 90 ml fourteen (46.66%). Fiberoptic endoscopic evaluation of swallowing was analyzed for swallowing patterns and laryngeal pathology. In all patients, laryngopharyngeal reflux symptoms were noted. FEES showed following abnormalities: aspiration (liquid), penetration, premature swallowing and multishallowing (liquid, solid food), retention (liquid, solid food). Results are presented in table 1. In addition, FEES revealed eight patients with episodes of upper esophageal sphincter (UES) opening, and four patients with velopalatal insufficiency.

**15G.16 THE MULTIDISCIPLINARY EFFORTS FOR THE ELDERLY WITH DYSPHAGIA**

C. Emborg¹; M. Stauner¹; M. Valentinus¹; T. Bossow¹ / ¹Roskilde Kommune.

Introduction: The municipality Roskilde, Denmark has established a multidisciplinary nutrition unit consisting of an occupational therapist, a clinical dietician, a bachelor in nutrition and health, and a dental hygienist. The focus is on the correlation between prevention and early identification of dysphagia, malnutrition and insufficient oral hygiene. The emphasis is placed on the development of prevention strategies and early identification of dysphagia, malnutrition and insufficient oral hygiene. The importance of early identification of dysphagia requires a multidisciplinary approach including meal adaptation, guidance about sufficient nutrition and oral care.

**15H.01 PEAK EXPIRATORY COUGH FLOW AND RESPIRATORY MUSCLE FUNCTION IN ACUTE STROKE PATIENTS**

A. Guillén-Solà¹; M. Messaggi-Sartor¹; C. Ramírez¹; R. Boza¹; E. Duarte¹; E. Marco¹ / ¹Hospitals Mar-Esperança, Parc de Salut Mar

INTRODUCTION: Cough is an important mechanism to protect from aspiration. It has been demonstrated that cerebrovascular events may affect cough function. Furthermore, peak expiratory cough flow (PECF) is an objective tool to assess cough effectiveness. Aims: 1) to assess the peak expiratory cough flow and respiratory muscle strength 2) to examine the relationship between PECF and swallowing function in patients with acute stroke admitted in a neuromotor rehabilitation unit. MATERIAL/METHODS: We prospectively assessed PECF, respiratory muscle strength and swallowing function in a cohort of 51 patients. Inclusion criteria were: first-ever stroke event, and time since stroke onset <3 weeks. Each participant was asked to perform 5 cough into an analog FEFR meter (Mini Wright Peak Flow Meter). Respiratory muscle strength were assessed by maximal inspiratory and expiratory pressures (PImax and PEmax, respectively). Of these patients, 19 patients were submitted to swallow test (V-VST). The method primarily concerns adaptation of consistencies in diet and fluid, correct sitting position and relevant training exercises (N = 126). 2. Nutrition: Systematic weighing and weight development and the use of a nutritional assessment scheme; Energiensverderingsskema (EVS) (n = 84). 3. Oral care: Systematic screening (n = 42). 4. Common: Education and supervision of nursing staff and guidance of elderly. Results: On the basis of our observations, there is a close relation between dysphagia, malnutrition and insufficient oral hygiene. Early identification of dysphagia requires a multidisciplinary approach including meal adaptation, guidance about sufficient nutrition and oral care.

**Results**

<table>
<thead>
<tr>
<th>N = 51</th>
<th>Elderly with dysphagia</th>
<th>Elderly with dysphagia + unexplained weight loss</th>
<th>Elderly with dysphagia + insufficient oral hygiene and need dental care</th>
<th>Elderly with dysphagia + unexplained weight loss + insufficient oral hygiene and need dental care</th>
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<tbody>
<tr>
<td></td>
<td>n = 84</td>
<td>n = 34 (40.5 %)</td>
<td>n = 37 (36.0 %)</td>
<td>n = 17 (40.5 %)</td>
</tr>
<tr>
<td>Living in nursing home</td>
<td>n = 42</td>
<td></td>
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</table>

**15G.17 THE MULTIDISCIPLINARY EFFORTS FOR THE ELDERLY WITH DYSPHAGIA**

C. Emborg¹; M. Stauner¹; M. Valentinus¹; T. Bossow¹ / ¹Roskilde Kommune.

Introduction: The municipality Roskilde, Denmark has established a multidisciplinary nutrition unit consisting of an occupational therapist, a clinical dietician, a bachelor in nutrition and health, and a dental hygienist. The focus is on the correlation between prevention and early identification of dysphagia, malnutrition and insufficient oral hygiene. The importance of early identification of dysphagia requires a multidisciplinary approach including meal adaptation, guidance about sufficient nutrition and oral care.
to videofluoroscopic examination of swallowing function (VFSS). Main outcomes were: PECF and maximal respiratory pressures. Statistical analysis performed were t-student test for independent sample and Pearson correlation. RESULTS: Stroke patients (65.0±13.6 years, male 66.7%) presented impairment on respiratory muscle strength (PImax 56.9 cmH2O ±25.6 and PEmax 79.8±29.5 cmH2O) and low values for PEF-CF (266.7 ±106.8 L). Patients submitted to VFFS were stratified according to penetration aspiration scale severity (PAS>Greater or equal>3 was considered dysphagia and PAS<3 was considered no dysphagia). Dysphagic patients presented lower values for PECF (226.1±144.6 L) and for PImax (42.4±17.4 cmH2O) in comparison with non-dysphagic patients. We found medium and significant correlation between PECF and PImax and PEmax (P=0.509, p=0.025), respectively. CONCLUSION: Stroke patients presented low values for PECF and for respiratory muscle strength. In addition dysphagic patients present major impairment on cough function.

15H.02 IMPAIRMENTS IN OROPHARYNGEAL SWALLOW RESPONSE IN CHRONIC POST-STROKE PATIENTS ASSESSED BY VIDEOFLUOROSCOPY

N. Vilardell1; L. Roies1; V. Arreola1; A. Martín1; D. Muriana1; E. Palmeras1; P. Clavé1 1Hospital de Mataró

Background Oropharyngeal dysphagia (OD) is a major complaint following stroke and is associated with poor outcome and high mortality rates. Aim To describe factors associated with impairments in safety of swallow and to characterize the oropharyngeal swallow response in chronic post-stroke patients (PSP). Methods PSP were screened for OD 3 months after stroke, with the clinical volume-viscosity swallow test (V-VST). Positive results were confirmed by videofluoroscopy (VFS) study. Demographic, clinical, neurotopographical and videofluoroscopic factors were compared between those PSP with safe (penetration-aspiration scale, PAS<less than or equal to>2) and unsafe swallow (PAS>Greater or equal to>3). A receiver operating characteristic (ROC) curve was drawn for the laryngeal vestibule (LV) closure time to determine the optimal cut-off time predicting unsafe swallow. Results 73 PSP (76.7±7plusmnus-9.3 years, 53.4% male), 97.3% confirmed OD in the VFS (20.6% impaired efficacy and 75.3% both safety and efficacy impairments). PSP with unsafe swallow were older, had strokes that were more severe, left-sided and total artery cerebral infarction and poorer functional and nutritional status compared with PSP with safe swallow (p<0.05). PSP with unsafe swallow presented a significant prolonged LV closure time at all viscosities. In addition, unsafe swallow was associated with decreased final bolus velocity and reduced force of propulsion at liquid and nectar. We described a LV closure time of 340 ms as a fair cutoff to predict unsafe swallow in chronic PSP at liquid and nectar viscosities. Conclusions There are several stroke risk factors associated with impaired safety of swallow in PSP. In addition, delayed times to airway protection and decreased bolus velocity are the key biomechanical impairments associated with unsafe swallow in chronic PSP.

15H.03 NEURAL SUBSTRATES OF DYSPHAGIA AFTER ISCHEMIC STROKE USING Voxel-BASED LESION SYMPTOM MAPPING

S-B Pyun1; H.I. Moon1; H.J. You1; W.S. Tae1; H.Y. Jung1 1Korea University College of Medicine; 2Inha University Hospital.

Purpose: To identify associated lesions with dysphagia after ischemic stroke using voxel-based lesion symptom mapping (VLSM) and compare the difference of lesion pattern between oral and pharyngeal phase dysphagia. Materials and methods: We retrospectively screened the stroke patients who met the inclusion criteria; a first-ever stroke, supratentorial lesion and who underwent brain MRI and videofluoroscopic swallowing study (VFSS). Stroke patients who had frontal or temporal stroke were excluded. Finally brain MRI data of total 83 stroke patients were selected for VLSM analysis. Demographic data, neurologic characteristics, feeding status, clinical aspiration sign and Functional dysphagia scale (FDS). We generated statistic maps of lesion contribution related to dysphagia using VLSM. Results: Subjects’ mean age was 70.1±11.6 years. Time between stroke onset and evaluation was 21±18 days. Among 83 patients, 41 (49%) had a right hemispheric stroke, 36 (43%) had a left hemispheric stroke, and 6 (8%) had a bilateral lesion. VLSM revealed that FBDS was associated with damage to the putamen, caudate, insula, frontal precentral gyrus, inferior frontal gyrus. Asymmetry was observed and lesions were more widely distributed in the left than right hemisphere. Lesions correlated with FDS oral score were mainly distributed in the frontal lobe and insula. Otherwise, VLSM result associated with FDS pharyngeal score showed the lesion in basal ganglia. Conclusions: In our results, lesions correlated with dysphagia were more widely distributed in the left hemisphere, reflecting the possibility of lateralization of swallowing function. And oral phase dysphagia was associated with frontal lobe and insula, the lesion correlated with cognitive function or apraxia. It might have some component of oral apraxia. And the lesions associated with pharyngeal dysphagia were basal ganglia, structure that has a role in automatic movements by converging the afferent input.
15H.04 NON-INVASIVE CEREBELLAR NEUROSTIMULATION WITH HIGH-FREQUENCY RTMS REVERSES CORTICAL SUPPRESSION OF THE HUMAN PHARYNGEAL MOTOR SYSTEM INDUCED BY A VIRTUAL LESION

M. Watanabe1; E. Michou1; A. Ragnis-Zborowska2; M. Inoue1; S. Hamdy1;1Division of Dysphagia Rehabilitation Niigata University Graduate School of Medical and Dental Sciences; 2Centre for Gastrointestinal Sciences, University of Manchester.

Introduction: We have previously shown that sustained excitation of human pharyngeal motor cortex can be induced by 10-Hz repetitive transcranial magnetic stimulation (rTMS) applied to the cerebellum. The aim of this study was to examine the therapeutic potential of 10-Hz cerebellar rTMS by testing its ability to reverse focal cortical suppression induced by a virtual lesion. Materials & Methods: Thirteen healthy volunteers were recorded pharyngeal electromyography. Baseline measurements of cortical excitability assessed through motor evoked potentials (MEP) at three sites (both dominant and non-dominant pharyngeal cortices and hand motor cortex) and cerebellar excitability in each cerebellar hemisphere were obtained by single-pulse TMS. Thereafter, each subject received 1-Hz rTMS to the dominant pharyngeal motor cortex to induce the focal cortical suppression. Subsequently, subjects were randomized to receive one of three cerebellar 10-Hz rTMS interventions (ipsilesional cerebellar hemisphere, contralesional cerebellar hemisphere and ipsilesional cerebellar hemisphere) in a virtual lesion. Our data suggest that 10-Hz cerebellar rTMS may have a therapeutic role in recovery from dysphagia.

15H.05 NEUROMUSCULAR ELECTRICAL AND GUSTATIVE THERMAL TACTILE STIMULATION PROGRAM IN STROKE: PREVIOUS RESULTS

P.C. Cola1; R.R.D. Santos2; S.M.M Onofri2; R.G. Silva2;1Marília University; 2Paulista State University.

Introduction: Studies with oropharyngeal dysphagia show that neuromuscular electrical stimulation in association with gustative thermal tactile stimulation could be better on recovering swallowing after stroke. The aim of the study was to propose and measure therapeutic program with gustative thermal tactile stimulation and neuromuscular electrical stimulation in stroke. Material & Methods: Previous results from a randomized clinical trial. Participated dysphagic individuals with at least 90 days or more after stroke. The therapeutic program applied was gustative thermal tactile stimulation (sour cold taste) in association with neuromuscular electrical stimulation (FES-electric current). The therapeutic program was realized in daily sessions during the week, excluding weekend, making 15 sessions. Individuals were evaluated before and after treatment using Fiberoptic Endoscopic Evaluation of Swallowing, Functional Oral Intake Scale (FOIS) and visual analog scale. Results: Until this moment 4 individuals were included, 1 female and 3 male, 42 to 78 years old, ictus median 6 months, 3 left cortical damage and 1 right cortical damage. Before treatment individuals showed - posterior oral spillage until below valecule point, the average time between posterior oral spillage and pharyngeal response was 4233 milliseconds (SD 2,899), 2 penetration and 1 aspiration laryngotracheal episode. FOIS scale varied of 1 until 3. The visual analog scale varied of 3 until 6. After treatment - posterior oral spillage until below valecule point, the average time between posterior oral spillage and pharyngeal response was 1581 milliseconds (SD 340,3), 2 penetration and 1 aspiration laryngotracheal episode. FOIS scale varied of 2 until 5. The visual analog scale varied of 4 until 10. Conclusion: The previous results showed improvement in swallowing function, oral intake and self-perception, however some of them still have penetration and aspiration laryngotracheal.

15H.06 FEES ASSESSMENT IN DYSPHAGIA OF PATIENTS WITH SEVERE ACQUIRED BRAIN INJURIES (ABI)

R. Cascioli1; D. Fontana1; R. Locatelli1; M. Fiorani1; S. Bosi1; G.B. Castellani1;1Montecatone Rehabilitation Institute.

Introduction: dysphagia is common in patients hospitalized in the rehabilitation unit with severe acquired brain injury (ABI). Aspiration post ABI occurs in 30 to 50% of patients with dysphagia and it is more common in more severe head injuries, requiring VMBS (Videofluoroscopic Modified Barium Swallow study) imaging investigations to be detected; furthermore silent aspiration is not uncommon. Insufficient evidences suggest that FEES (Flexible Endoscopic Evaluation of Swallowing) is more sensitive than VMBS in assessing swallowing the use of pulse oximetry to detect aspiration in patient with stroke, while MEBD (Modified Evans Blue Dye) test may be better at detecting more than trace of aspiration. Published studies have been conducted mainly in the Stroke Unit. This study has been performed to assess sensitivity of FEES in a cohort of patients with severe ABI during post-acute phase of neuromodulation. Material & Methods: prospective observational study on patients with severe ABI admitted to Montecatone Rehabilitation Institute, an acute rehabilitation hospital located in Imola (Italy), with a capacity of 150 beds, 23 of which dedicated to patients with ABI after discharge from ICU. In this ward the assessment of dysphagia involves
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15H.07 STROKE-ASSOCIATED PNEUMONIA RISK SCORE: VALIDITY IN A FRENCH STROKE UNIT
E. Cugy1; I. Sibon2 / "CH Arcachon; "CHU Bordeaux"

Introduction - Stroke-associated pneumonia is a leading cause of in-hospital death following stroke. Moreover patients with stroke-associated pneumonia show poorer functional outcome. Screening patients at high risk is one of the main challenges in acute stroke units. Risk scores are actually underdeveloped to predict post-stroke pneumonia based on routinely available data. None is evaluated in a French population.

The aim of our study is to evaluate the validity of four risk scores (Pneumonia score, A2DS2, ISAN score and AIS-APS) in a population of ischemic stroke patients admitted in a French stroke unit. Material & Methods - Consecutive ischemic stroke patients admitted to our stroke unit are retrospectively analyzed. We search data that allowed to retrospectively calculate the different pneumonia risk scores in medical records. Sensitivity and specificity of each score are assessed, for in-prospect calculating the different pneumonia risk scores in medical records.

Results: - Only 1960 patients were included, median age was 69 years (IQR 13-80). Aetiology of ABI were stroke, trauma, anoxia and other causes. During hospitalisation FEES was performed to assess dysphagia in patients with risk factors for aspiration: poor cognitive functioning, presence of tracheostomy, history of abs ingestis, brainstem involvement or other comorbidities. Conclusions: in patients with severe ABI, FEES, when it is not available VMBS, is easy to administer, cheap and minimally invasive. It allows multidisciplinary assessment, definition of rehabilitation strategies and a better follow-up.

15H.08 THREE YEARS AFTER SEVERE DYSPHAGIA CAUSED BY STROKE
H.R. Farpour1; S. Farpour1 / "Assistant professor, Bone and Joint Diseases Research Center, department of physical medicine and rehabilitation, Shiraz Univers; 2corresponding Author: Shiraz Geriatric Research Center, Shiraz University of Medical Sciences, Shiraz, Iran."

15H.09 DYSPHAGIA IN PATIENTS WITH ACUTE TRAUMATIC CERVICAL SPINAL CORD INJURY
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Instruction: Dysphagia is a relatively common secondary complication in patients with traumatic cervical spinal cord injuries (TCSI). The purpose of this study was to: (1) determine the incidence of penetration and aspiration in patients with acute TCSI, and (2) examine the temporal relation of penetration and aspiration during swallowing. Methods: A total of 46 applicable patients with TCSI admitted to Tampere University Hospital from February 2013 to April 2015 were evaluated with a videofluoroscopic swallowing study (VFSS). Rosenbek’s penetration-aspiration scale (PAS) was used to classify the degree of penetration or aspiration. The highest PAS score (range 1-8) from each patient was included in the analysis. The timing of penetration or aspiration was classified as: (1) pre-, (2) during-, (3) during and post- or (4) post swallowing. The exclusion criteria is presented in Table 1. Results: Of the 46 patients, 84.8% were male. The mean age at the time of the injury was 62.1 years. Most patients had an incomplete TCS (84.8%) due to a fall (65.2%). In the VFSS 19(41.3%) patients penetrated and 15 (32.6%) aspirated. Of the patients who aspirated, 73.3% aspirated silently. Only twelve (26.1%) of the patients examined with the VFSS had a PAS score of 1 (= no penetration or aspiration). The penetration or aspiration occurred during swallowing in 17 (50.0%) patients, dur-
ing and post-swallowing in 7 (20.6%) patients and post-swallowing in 9 (26.5%) patients. Pre-swallow penetration or aspiration was not detected. In one case (2.9%) the timing of the silent aspiration was missed because there was a delay in starting the fluoroscopy. Conclusions: The incidence of penetration or aspiration was high (73.9%) in this cohort of patients with TCSCI. The majority of aspirating patients (73.3%) aspirated silently. Among patients with TCSCI, the ability to swallow should be evaluated routinely by an experienced speech therapist before initiating oral feeding.

Table 1: The exclusion criteria

<table>
<thead>
<tr>
<th>Primary exclusion criteria</th>
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</thead>
<tbody>
<tr>
<td>(1) age &lt;18 years</td>
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<tr>
<td>(2) respiratory arrest</td>
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<tr>
<td>(3) severe brain injury</td>
</tr>
<tr>
<td>(4) prior medical condition causing dysphagia</td>
</tr>
<tr>
<td>(5) pregnancy</td>
</tr>
<tr>
<td>(6) refused to participate</td>
</tr>
</tbody>
</table>

Secondary reasons for exclusion:

| (1) low level of consciousness at the time of recruitment |
| (2) discharged before recruitment                        |
| (3) a delay of > three months between the injury and admission to the study hospital |

15H.11 THE LIVED EXPERIENCE OF DYSPHAGIA REHABILITATION FOLLOWING STROKE: WHAT CAN WE LEARN FROM PUBLISHED AUTOBIOGRAPHIES?

J. Moloney¹; M. Walsh² / ¹Trinity College, Dublin

Introduction: Persons living with dysphagia following stroke often experience uncomfortable symptoms such as persistent coughing, choking and poor salivary management. They may spend long periods of time unable to eat or drink orally or with restrictions on oral intake. The potential impact of these consequences on the quality of life of these persons is gaining increasing attention, both in the literature and in healthcare delivery. Published autobiographies have traditionally been used in the teaching of healthcare students. However in recent years there has been increasing recognition that the experiences recounted in these autobiographies may also hold valuable information when viewed through the eyes of a qualitative researcher. With this in mind, the current study considers published autobiographies written by persons who have experienced dysphagia following stroke, in the hope of providing further valuable insights into the lived experiences of this vulnerable patient group.

<table>
<thead>
<tr>
<th>Superordinate Theme</th>
<th>Subcategories</th>
</tr>
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<tbody>
<tr>
<td>Physical consequences of dysphagia</td>
<td>Living with the impact of dysphagia symptoms along the trajectory of dysphagia</td>
</tr>
<tr>
<td>Planning for the future</td>
<td>Coping with the future of swallowing</td>
</tr>
<tr>
<td>Coping with eating</td>
<td>Coping with eating difficulties</td>
</tr>
<tr>
<td>Relationships</td>
<td>Maintaining meaningful relationships</td>
</tr>
<tr>
<td>Identity</td>
<td>Coping with identity</td>
</tr>
<tr>
<td>Control</td>
<td>Coping with control</td>
</tr>
</tbody>
</table>

Table 2: Overview of themes and associated subcategories

15H.10 RECOVERY PROCESS OF SWALLOWING AFTER CRICOPHARYNGEAL MYOTOMY AND LARYNGEAL SUSPENSION. CASE REPORT AND KINEMATIC ANALYSIS USING 3D DYNAMIC COMPUTED TOMOGRAPHY

Y. Inamoto¹; E. Saitoh¹; S. Shibata¹; A. Yoichiro¹; K. Hitoshi¹; Y. Itoh¹; J.B. Palmer² / ¹Fujita Health University; ²Johns Hopkins University

Purpose, Jaw protrusion is a compensatory strategy after cricopharyngeal myotomy and laryngeal suspension to treat severe dysphagia with cricopharyngeal dysfunction. Little is known regarding the recovery of swallowing function after these procedures. In the present study, we analyzed the mechanism of recovery using 320-row area detector CT (320-ADCT). Methods: The subject was a 62 y.o. woman with severe chronic dysphagia due to medullary infarction. She underwent cricopharyngeal myotomy and laryngeal suspension because of impaired UES opening and poor pharyngeal contraction of paralyzed side. 320-ADCT scan was performed during swallows of 4ml liquid (5%w/v) before surgery and at 3 months, 35 months, 43 months, and 56 months after surgery. 3D images were created each 0.1s. Four parameters were measured: (1) critical event timing (2) hyoid and larynx displacement (3) UES cross sectional area and (4) pharyngeal volume. Results: At 3 months after surgery, the UES opened only when the hyoid was pulled inferiorly and anteriorly by actively protruding the jaw. At 35 months, the hyoid moved anterosuperiorly (without jaw protrusion) and the pharynx contracted just slightly. At 43 months, the hyoid moved further forward, followed by coordinated pharyngeal contraction. At 56 months, the hyoid moved further upward and forward with earlier pharyngeal shortening and improved UES opening. The pharyngeal contraction ratio was 52% before surgery and increased to 72% 43 months after surgery. Discussion: A coordinated pharyngeal swallow re-emerged more than 3 years after surgical intervention for severe dysphagia. This suggests that plasticity of the swallowing cortex persists over an extended period after surgical treatment. 320-ADCT is a useful for kinematic analysis of recovery from severe dysphagia.
15H.12 RECOVERY OF SWALLOWING IN TWO PATIENTS IN POST-ACUTE PHASE WITH SEVERE DYSPHAGIA FROM WALLEMBERG SYNDROME BY COMBINED USE OF CONVENTIONAL THERAPY, ELECTRO STIMULATOR AND IOPI DEVICE

R.R. Raggi1; R.A. Antenucci2; M.B. Benvenuti2; G.F. Ferrari2; D.C. Cuda3
1Rehabilitation Intensive Medicine Unit, Castelsangiovanni, Piacenza; Otolaryngology Unit, Piacenza

INTRODUCTION Wallenberg Syndrome is due to medulla oblongata injury, with impairments functions, including severe dysphagia. MATERIALS AND METHODS 1) M.S., woman, 42 years old, 6/7/15 bulb injury in Wallenberg Sdr. 25/7 SNG for DOSS=1 4/8 PEG Hospital rehabilitation 28/07-20/8 with speech therapy. FEES 1/9: DOSS=1 16/9 come to our Hospital: speech therapy to strengthen soft palate motility (breath, hard vocal attack, stimulation with frosted mirror), tongue (strength and resistance) with praxie, exercises versus resistance with tongue depressor and IOPI. 45’ daily treatment with Electro Stimulator (ET) Vitalstim Intelect, electrodes in 3b position (submandibular horizontally) to the highest power tolerated (7 mA), periodic tests with small amounts of semisolid and/or semiliquid and movements of manual elevation for larynx during swallowing. 2) M.A., man, 92 years old, onset 8/9/15, hospitalization in Neurology: bulb injury in Wallenberg Sdr.; positioned PEG for DOSS=1. Hospital Rehabilitation from 2/10 to 20/11/15; carried out FEES with unchanged DOSS. 12/27’16 come to our Hospital and started the same treatment: exercises classic, ET and IOPI, daily sessions of 45’ for 3 months. RESULTS 1) After 3 weeks efficient swallowing for semi-solid and, sometimes, soft; moreover liquid, no stasis or bolus ejection from mouth, sO2 doesn’t decrease, clear voice, no cough. IOPI: from 50 KPa to 77 KPa. 2) After 3 months, FEES (31/05): stasis, but efficient cleaning, no penetration, sO2 doesn’t decrease, clear voice, no cough: starts to swallow semisolid small meals with ET working. IOPI: from 32 KPa to 56 KPa. Patient eat with limited meals; the PEG can be removed. CONCLUSIONS The combined Speech Therapy treatment with ET and IOPI solved two severe cases of dysphagia from Wallenberg Syndrome.

Poster Presentations
SATURDAY OCTOBER 15

15H.13 INTERNATIONAL DISSEMINATION AND USAGE OF THE GUGGING SWALLOWING SCREEN (GUSS). A PROSPECTIVE CROSS SECTIONAL STUDY

M. Traqi1; B. Firlinger2; Y. Teuschl2; A. Dachenhausen2; M. Brainin1,2
1University Hospital Tulln; 2Danube University Krems

Introduction: The Gugging Swallowing Screen (GUSS) was developed to determine dysphagia severity and the risk of aspiration in acute stroke patients. Compared to other screenings the testing sequence is unique focused on semi-solid food (saliva, semisolid, fluid and solid texture). According to the dysphagia severity, different diet recommendations are given. Since publication in 2007 the GUSS research team received questions related to translation, validation, usage and other general aspects. The aim of this study was to gain an overview of the international dissemination and usage of the GUSS. Material & Methods: In a prospective cross sectional study a survey was sent to 85 persons requesting information concerning GUSS and was posted in the international Facebook group “Dysphagia Therapy Group-Professional Edition” (9.564 followers). Results: The response rate was 61.2% (52/85) for the individually addressed persons; 47 questionnaires came from the Facebook group, 91 completed the survey. The GUSS has been translated in eleven languages (Chinese, Czech, Danish, English, Korean, French, Portuguese, Spanish, Russian, Thai, Vietnamese), eight of them were validated. At least half (45/91) of the participants from 13 different countries are using the GUSS routinely in their clinical department. In these clinics the GUSS is mainly performed by Speech and Language Pathologists (66.7%) and nurses (51.1%). The most frequently mentioned advantages of the GUSS were the test sequence 32/44 (72.7%) and the diet recommendations 28/44 (63.6%). The use of GUSS recommended by hospital or national guidelines was confirmed by 30/45 (66.7%). The use of GUSS recommended by nurses and therapists was 36/45 (80%) had implemented the GUSS at their department. Participants 44/91 not using the GUSS used water testing procedures. The most common language used was English (66.7%); the most frequently used scales were the test sequence (72.7%) and diet recommendations (63.6%). The GUSS is a suitable tool for assessing quality of life in post-stroke patients with dysphagia. Further, we strive for it to be used systematically at the follow-up of the patients. Dysphagia in post-stroke patients remains a significant clinical problem. Findings from this control test report should provide an enhanced understanding of dysphagia, and its’ impact on quality of life in post-stroke patients.

15H.14 QUALITY OF LIFE IN POST-STROKE PATIENTS WITH DYSPHAGIA – BILATERAL COLLABORATION

V.I. Zupanc isoski1; D. Vodanovic1 / 1University Medical Center Ljubljana; 2University Hospital Center Zagreb

Dysphagia, defined as difficulty swallowing, is recognized as a problem for many patient and in many healthcare settings. Impaired swallowing has numerous health repercussions and the potential to significantly impact quality of life. We prepared an international control test report on the quality of life of post-stroke patients with dysphagia. Quality of life was measured using SWAL-QOL questionnaire to describe how swallowing disorders modify the daily life of patients and cross-cultural translation and adaptation to Slovenian and Croatian was carried out. The sample was composed of 22 participants; 12 Slovenian and 10 Croatian. Functional eating ability was estimated using FOIS scale. In the present study, quality of life sub-scales indicated that negative impact of dysphagia on the quality of life was greater among Croatian participants. Additionally, our study shows that some cultural differences seem to exist between dysphagia patients in Slovenia and Croatia. In both participating countries the SWAL-QOL questionnaire was validated to be a suitable tool for assessing quality of life in post-stroke patients with dysphagia. Further, we strive for it to be used systematically at the follow-up of the patients. Dysphagia in post-stroke patients remains a significant clinical problem. Findings from this control test report should provide an enhanced understanding of dysphagia, and its’ impact on quality of life in post-stroke patients.

15H.15 RELATIONSHIP BETWEEN PHARYNGEAL SWALLOW RESPONSE AND LATERALIZATION OF BRAIN LESION IN STROKE

T.C. Alves1; P.C. Cola2; A.G. Jorge3; A.R. Gatto4; R.G. Silva4 / 1Paulista State University- UNESP - Marilia, São Paulo; 2Marilia University - UNIMAR – Marília, São Paulo; 3State Bauru Hospital - Bauru, São Paulo

Introduction: The findings of oropharyngeal swallowing and location of the lesion in stroke have been studied, but it is still necessary investigations involving the lateralization of cortical damage and swal-
Lowing disorders. The aim of this study was to verify the relationship between pharyngeal swallow response (PSR) with the lateralization of brain lesion in individual after stroke with oropharyngeal dysphagia in different food consistencies and age. Material & Methods: For this study were analyzed 90 videofluoroscopic swallow studies (VFSS), and 73 were selected, covering all the criteria for inclusion and exclusion. These VFSS were of individuals after unilateral cortical ischemic stroke with neurological diagnosis confirmed by clinical medical and neuro-imaging examinations. They were divided into two groups, according to the lateralization of the cortical lesion, and the group 1 (G1) was composed of 39 individuals with left cortical lesion and group 2 (G2) of 34 patients with right cortical lesion. The examinations of G1 and G2 were analyzed in the puree and thin liquid consistencies. To evaluate the PSR, the exams were analyzed using computerized specific software and two judges trained in the procedure. For the analysis of the PSR was carried out agreement between the judges in the intraclass correlation test and were considered the PSR average between the judges. It was used the Mann-Whitney test to compare the groups. Results: The results showed no statistical difference between the groups for the PSR in both consistencies and age. Conclusions: There was no relationship between the pharyngeal swallow response with the lateralization of brain lesion, regardless of food consistency or age in the individual after stroke with oropharyngeal dysphagia.

15H.16 ORAL DIETARY INTAKE LEVEL IN THROMBOLYSED AND NON-THROMBOLYSED PATIENTS AFTER SCHEMIC STROKE
M.R.A. Avelino¹; C.G.M. Montibeller²; K.F.L. Luchesi³; C.T.M. Mituuti¹; P.W.R. Ribeiro¹; A.M.F. Furkim¹; T.C.A. Alves³ / Federal University of Santa Catarina; Hospital Governador Celso Ramos; ³Hospital of Botucatu Medical School, UNESP;

Objective: Assess the ability of dietary intake orally in subjects undergoing thrombolytic therapy and compare it with non-thrombolytic subjects post-ischemic stroke. Methods: Documentary cross-sectional study with 87 post-ischemic stroke patients. Subjects were divided as to the type of neurological intervention: group 1 consisted of subjects undergoing brain reperfusion therapy or thrombolysis and group 2 for those undergoing no such therapy or non-thrombolysed. Data was obtained from the subjects relative to age, sex, level of oral dietary intake at the beginning of hospitalization and at discharge, length of hospital stay, comorbidities and site of neurological lesion. Results: Group 1 was composed of 39 patients while 48 patients were in group 2. Both groups consisted of subjects with similar mean age (65 and 68 years, respectively) and balanced gender distribution (18 (46.1%) and 25 (52%) male, 21 (53.8%) and 23 (48%) women, respectively). Both groups presented hypertension as the most frequent comorbidity (31 (73.5%) and 39 (79.2%) subjects, respectively). The individuals in group 1 demonstrated improvement of oral dietary intake (p=0.004) and shorter hospital stay (p=0.007) when compared with group 2. Conclusion: There was a greater improvement of oral dietary intake and shorter hospital stay for patients undergoing thrombolytic therapy. Keywords: stroke, swallowing disturbances, thrombolytic therapy.

15H.17 SHORT TERM EFFECTS OF 5HZ REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (RTMS) ON SWALLOWING AND SPEECH FUNCTION IN POST-STROKE INDIVIDUALS
K.Y.I. Cheung¹; M.K.K. Chan¹; C.S. Wong²; T.F.R. Cheung³; S.W.L. Li³; M.Y.K. Chiu¹ / Swallowing Research Laboratory, Division of Speech and Hearing Sciences, The University of Hong Kong; ²Department of Diagnostic Radiology, The University of Hong Kong; ³Division of Neurology, Department of Medicine, The University of Hong Kong; ⁴Tung Wah Hospital Introduction: Co-occurrence of dysphagia and dysarthria is common after stroke due to changes on tongue strength and coordination. A previous study by our team has shown that Hz repetitive transcranial magnetic stimulation (rTMS) applied over the tongue area of the motor cortex can improve swallowing functions in individuals with post-stroke dysphagia. The current study further investigates effects of rTMS on rehabilitation of swallowing and speech functions after stroke. Materials and Methods: 20 participants (mean age = 62.6 years old) with chronic post-stroke dysphagia and dysarthria were included in the study. They were randomly assigned to active rTMS (N=16) or sham rTMS (N=4) group. Each participant received 3000 pulses of 5Hz rTMS for 10 days. The Hz rTMS was applied over the tongue area of the motor cortex. All participants were assessed on swallowing functions at baseline and 2 months after rTMS using videofluoroscopic swallowing study. Five of the active rTMS participants were assessed on speech functions 1 week before, and immediately, 1 month and 2 months after rTMS. The outcome measures for speech functions included rates of tongue movements, diadochokinetic (DDK) rate and speech rate. Results: Active group showed greater reduction in post-swallow valleculae and pyriform sinus residue than the sham group. They also showed larger decrease in pharyngeal constriction ratio than the sham group. The 5 active rTMS participants showed improvements in rates of tongue movements and speech rate immediately post-rTMS. These changes were maintained up to 2 months post-rTMS. They also showed increased DDK rate at 1 and 2 months post-rTMS. Conclusions: The current study supports the use of Hz rTMS to improve swallowing functions in individuals with chronic post-stroke dysphagia. It can potentially improve speech functions in post-stroke dysarthric patients. Acknowledgement. This project was funded by Early Career Scheme, University Grants Council, Hong Kong.
**Abstract Book**

**Poster Presentations**

**SUNDAY OCTOBER 15**

**15I.02** **CHANGES IN ORAL BACTERIA AMOUNT DURING ORAL CARE PROCEDURES IN PATIENTS WITH NO ORAL INTAKE**

R.W. Watanabe1; K.M. Matsuo2; R.M. Matsuki1; E.K. Kinoshita1; H.S. Suzuki1; K.N. Nakagawa2; T. Ohno2; M.M. Moriya3; Y.S. Sumi3; H.T. Taniguchi2 ; R.W. Watanabe1; K.M. Matsuo2; R.M. Matsuki1; E.K. Kinoshita1; H.S. Suzuki1; K.N. Nakagawa2; T. Ohno2; M.M. Moriya3; Y.S. Sumi3; H.T. Taniguchi2

Introduction: The aim was to show the effect of Functional Chewing Training (FCT) in children with cerebral palsy (CP) who have chewing disorder. Material & Methods: This study was designed as a single blind, randomized, controlled trial. Eighty CP children with chewing disorder were randomized and split between the FCT group (31 males, 19 females; mean age 3.5 ± 1.9 years; min=1.5, max=10) and the control group (16 males, 14 females; 3.4 ± 2.3 years; min=1.5, max=11) receiving usual oral motor exercises. FCT is a new treatment approach for chewing disorders which includes providing postural control, positioning the food, sensory stimulation to gingiva, chewing exercise and increasing the food consistency gradually. They were applied as home program for 12 weeks and were followed with weekly. There were 3 evaluations including pre-training, 1 and 3 months after training. Chewing function was evaluated by analyzing video recordings and scored with Karaduman Chewing Performance Scale (KCPS). The Behavioral Pediatrics Feeding Assessment Scale (BPFAS) was used to evaluate feeding behaviors. Results: There was a significant improvement in KCPS scores three months after training in FCT group (p<0.001) despite no change in control group (p=0.07). There was also a significant improvement in all parameters of BPFAS towards 3 months after training in FCT group (p<0.001), only in two parameters of BPFAS in control group (p=0.02, p=0.02). Conclusions: It was concluded that FCT is an effective method to develop chewing function when comparing usual oral motor exercises.

**15I.03** **OLDER ADULTS WITH DYSPHAGIA: MEDICATION ADMINISTRATION IN A SECONDARY CARE SETTING**

S. Patel1; N. Bhatta1; W.J. McAuley1; F. Lia11 **School of Life and Medical Sciences, University of Hertfordshire, Hatfield, AL1 9AB; 2Cambridge University Hospitals NHS Foundation Trust, Cambridge, CB2 1QQ**

Introduction: Older adults (aged 65 years and over) are the major users of medicines and are also more vulnerable to dysphagia, which challenges their ability to take oral medicines. The aim of this study was to determine the extent of problems surrounding the administration of these dosage forms to older adults with dysphagia in secondary care.

Method: A prospective study was conducted in Addenbrooke’s hospital, UK from September-November 2014 (Ethics ref 14/YH/1105). Patients (over the age of 65) with swallowing difficulties were identified by ward pharmacists. A standardised pro forma was used to collect information from drug administration charts on the medicines that were prescribed for oral or enteral administration and the changes made to these dosage forms to facilitate swallowing. Results: There were 209 participants recruited with a median age of 79 years (range 65–100 years). A total of 1321 medicines were prescribed. The most common oral dosage forms prescribed were tablets and capsules as shown in Figure 1. However, 74% (n=809) of tablets and capsules prescribed were modified before administration to facilitate swallowing and methods used for the modification are shown in Figure 2. Participants with swallowing difficulties were also prescribed sustained release solid oral dosage forms. There were 69 sustained release tablets or capsules prescribed for 63 of participants and 38% (n=26) were modified to facilitate medicines administration, including crushing tablets or opening capsules and allowing chewing prior to swallowing, which poses potential risk to patient safety. Figure 1: Most common dosage forms prescribed for administration <IMAGE02> Figure 2: Methods used to overcome administration difficulties. Conclusions: The practice of modifying tablets and capsules occurs routinely to help facilitate administration of solid oral dosage forms for older adults with dysphagia in a secondary care. This practice can cause potential harm to the patient.

**15I.04** **OLDER ADULTS WITH DYSPHAGIA: MEDICATION ADMINISTRATION IN A SECONDARY CARE SETTING**

S. Patel1; N. Bhatta1; W.J. McAuley1; F. Lia11 **School of Life and Medical Sciences, University of Hertfordshire, Hatfield, AL1 9AB; 2Cambridge University Hospitals NHS Foundation Trust, Cambridge, CB2 1QQ**

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15I.04 A PILOT STUDY FOR NEUROMUSCULAR TAPING EFFICACY IN CHEWING STRENGTHENING
R.B. Ramella1; B.A.M. Bianchi1/1Ri.Lò

INTRODUCTION. Masseter muscle plays an important role in oral phase control. In patients with a various origin mouth-facial muscles balance alteration, we can often observe a masseter weakness and/or a difference in right and left side. This study sets the target to evaluate neuromuscular taping (NMT) on masseter muscle weakness and/or a difference in right and left side. This study sets the target to evaluate neuromuscular taping (NMT) efficacy on facilitating physiological masseter muscle contraction, increasing his strength, chewing smooth and timing, in association with traditional speech-therapy. MATERIALS AND METHODS. NMT is a technique that, using the application of an elastic tape with specific mechanical and elastic properties, offers a mechanical stimulation that is able to regularize neuromuscular proprioception. In the study, the tape was applied in under chin region, to support swallowing dynamic and to increase the number of saliva swallowing actions. There were placed three stripes, of 0.5 cm width, from chin to hyoid bone. For measurement, was used “Drooling Scale Evaluation” adapted for Italian language, that was filled in by relatives at the beginning and at the end of intensive treatment. The standard sample is represented by 4 kids, with neurological damage. OUTCOMES. The scale filling-in showed a drooling reduction in all clinical cases. A statistical analysis was realized and came up a strong correlation between NMT using and drooling reduction (correlation Pearson r: 0.99), even if the limited standard sample is a short-coming of the study. CONCLUSIONS. Therefore, NMT is an instrument useful to support speechtherapy, to regularize proprioception increasing swallowing actions and speeding up rehabilitation goal achievement.

15I.05 A PILOT STUDY FOR NEUROMUSCULAR TAPING EFFICACY IN DROOLING REDUCTION
B.A.M. Bianchi1; R.B. Ramella1/1Ri.Lò

INTRODUCTION. Drooling, in a person with a serious neuro-motor and/or cognitive damage, is an issue that gets a strong social negative impact. Families would like to obtain drooling reduction as the first goal. This study sets the target to evaluate neuromuscular taping (NMT) efficacy on drooling reduction, in association with traditional speech-therapy treatment techniques. MATERIALS AND METHODS. NMT is a technique that, using the application of an elastic tape with specific mechanical and elastic properties, offers a mechanical stimulation that is able to regularize neuromuscular proprioception. In the study, the tape was applied on masseter muscle. There were placed three stripes, of about 0.6 cm width, from tragus to lips corner. For chewing evaluation, before and after tape application, Chewy Tubes® were used (they are made of a thermo-elastic polymer material, 3/8” or 1/2” outside diameter). The standard sample is represented by 24 patients, of different ages and various origin mouth-facial muscles balance alteration. OUTCOMES. In all clinical cases was observed an increase of chewing actions number: the movement was smoother and with less effort. A statistical analysis was realized and came up a strong correlation between NMT using and masseter muscle strengthening (correlation Pearson r: 0.91 r sx: 0.92; P sx: 0.00486 r sx: 0.0082). CONCLUSIONS. Therefore, NMT is an instrument useful to support speechtherapy, to amplify the goal achievement.

15I.06 ADVERSE REACTIONS ON ORAL MOTOR FUNCTION AFTER BOTULINUM TOXIN-A INJECTIONS IN CHILDREN WITH DROOLING
K.Van Hulst1; C. Kouwenberg1; P.H. Jongerius1; J.C.M. Hendriks1; F.J.A. Van den Hoogen1; A.C.H. Geurts1; C.E. Erasmus1/1Radboud University Medical Center; 1Sint Maartenstcinkein Rehabilitation Center

INTRODUCTION: Treatment with Botulinum NeuroToxin-A (BoNT-A) injections in the salivary glands, although an off-label application, is a widely accepted effective intervention for excessive drooling in children due to central nervous disorders. No studies are known regarding the prediction of possible risk factors for adverse reactions (ARs) on oral motor function after BoNT. It is important to identify any predictors for ARs prior to treatment. The aims of this study were (1) To determine the incidence and nature of adverse reactions on oral motor function after injections of BoNT-A in submandibular glands; (2) To identify independent predictors for ARs after BoNT-A. MATERIAL & METHODS: Cohort study involving 209 children (123 boys, 86 girls, median age 8.4 y, 4.1-27.8) with Central Nervous System disorders who received submandibular BoNT-A injections for excessive drooling between 2002 and 2013. Adverse reactions were categorized to the ICF-CY domains: saliva swallowing-, eating-, drinking-, articulation-, and other problems. Univariable logistic regression was used to study differences in patients’ characteristics with and without ARs. Possible predictors were identified using multivariable logistic regression. Results: Transient AR’s prior to treatment. The aims of this study were (1) To determine the incidence and nature of adverse reactions on oral motor function after injections of BoNT-A in submandibular glands; (2) To identify independent predictors for ARs after BoNT-A. Material & Methods: Cohort study involving 209 children (123 boys, 86 girls, median age 8.4 y. 4.1-27.8) with Central Nervous System disorders who received submandibular BoNT-A injections for excessive drooling between 2002 and 2013. Adverse reactions were categorized to the ICF-CY domains: saliva swallowing-, eating-, drinking-, articulation-, and other problems. Univariable logistic regression was used to study differences in patients’ characteristics with and without ARs. Possible predictors were identified using multivariable logistic regression. Results: Transient AR’s were mild, 8.7% severe. Approximately 54% of the ARs spontaneously resolved within 4 weeks, were 3% still existed after 32 weeks. Cerebral palsy diagnosis, higher range of BoNT-A dosage and a pre-treatment drooling Quotient below 18% were found to be independent predictors for the occurrence of ARs. The adjusted odds ratios ranged from 2.4 to 8.13. Conclusions: Before the decision to inject submandibular BoNT-A, potential ARs should be discussed with parents. Oral motor function needs to be monitored because already existing swallowing-, eating-, and drinking problems may worsen. The three identified clinical predictors could be helpful to optimize patient selection.
Lymphangioma is a congenital fairly uncommon malformation of the lymphatic system, often involving areas of the head and the neck. The tongue is the most frequently affected site in the oral cavity. We report the case of a 20 months old female, who was referred to our rehab service when 16 months old, and had been formerly supervised by both the neonatal and the pediatric surgery teams. At birth, she was diagnosed with a multicystic neonatal lymphangioma with lingual (dorsum and floor of the tongue) and suprahyoid involvement, and displayed severe oropharyngeal dysphagia. Soon after, a tracheostomy was performed due to severely compromised airway and she required a nasogastric tube (NGT) after a second sclerotherapy and during the first year of life. Active monitoring was the preferred option among the potential management protocols due to the patient's age. Magnetic resonance imaging (MRI) and cranial ultrasound (CU) were performed for the diagnosis and the follow-up. Clinical observation found a bilateral erythematous swelling of the anterior third of the tongue's dorsum and taste buds were grossly enlarged. The tongue was thrusting forward and the oral seal was poor. Oral defensiveness was observed, and she showed food aversions even on a puree diet. No suction pattern was observed. The patient was submitted to a specific swallowing rehabilitation plan with the main objective of improving oral motor control. Working on building oral strength and endurance, combined with exercise the mouth muscles to discourage tongue-thrusting, promote tongue retraction and correct overall tongue positioning, began to show significant improvement in reduction of oral defensiveness which encouraged texture acceptance. However, further swallowing rehabilitation to develop proper feeding skills is needed. The case we report, shows the effectiveness of the improved muscular performance in oral phase leads to increased function as itself.
15I.10 DISFAPP.ES: AN APPLICATION TO IMPROVE SWALLOWING IN PEOPLE WITH OROPHARYNGEAL DYSPHAGIA

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INTRODUCTION. With steady increase, technology is becoming more important in our day to day lives, being present in our homes as leisure, work and information tool. In Health, more specifically in Rehabilitation, it can be very helpful in our patients’ treatment. There are publications where it is demonstrated how home treatment -supervised by a professional- has in certain areas similar effects on the functional recovery of the patient as on-site assistance in hospitals or clinics with the patient’s added comfort, transport expenses as well as a reduction of the costs of the entire treatment process. MATERIAL AND METHODS discofapp.es is a website with a very simple operation aimed at professionals in Oropharyngeal Dysphagia (OPD), the patients suffering from this pathology and their relatives. It comprises multimedia material: video and audio files together with described exercises and manoeuvres used in OPD rehabilitation and a decalogue that includes ten recommendations related to this application. To access the application, you simply have to click the following link, http://disfapp.es. The reading of a prior notification before entering the menu is required in order to prevent an inappropriate or harmful use of it. RESULTS AND CONCLUSIONS: The application provides information and its use is free. It can be consulted by professionals interested in OPD rehabilitation and a decalogue that includes ten recommendations related to this application. To access the application, you simply have to click the following link, http://disfapp.es. The reading of a prior notification before entering the menu is required in order to prevent an inappropriate or harmful use of it. RESULTS AND CONCLUSIONS: The application provides information and its use is free.

P. Macrae; I. Taylor-Kamarz; C. Anderson; I. Humbert; 1University of Canterbury. Rose Centre for Stroke Recovery and Research; 2Johns Hopkins University; 3University of Florida

Introduction: As swallowing is an internal function, augmented biofeedback is often required to facilitate cognitive control over this process. While biofeedback has long been used to allow patients to visualize various aspects of swallowing, it is not understood how varied forms of feedback influence manipulation of swallowing movements. This research aimed to determine the type of augmented feedback required to volitionally extend laryngeal vestibule closure (LVC) during swallowing. Methods: Two studies were completed to determine the required biofeedback for LVC manipulation. In the first study, 16 healthy participants completed multiple trials of a volitional laryngeal vestibule closure (vLVC) technique under one of two conditions: knowledge of performance (KP) + knowledge of results (KR) feedback (N=9) or no feedback (N=7). KP feedback conveyed information on kinematic accuracy of LVC. KR feedback conveyed information only on whether the required duration of LVC was achieved. In the second study, an additional two groups of participants had KP only (N=9) or KR only (N=8) as feedback. Improvement was measured across vLVC trials, defined as an increase in LVC duration based on video fluoroscopy. Results: First study: the combined feedback group (KP+KR) improved performance across trials (p = .01), with no difference from baseline seen for the no feedback group (p = .66). The second study assessed if KP or KR feedback in isolation improved performance compared with no feedback. It was revealed that KP and KR feedback did not differ from the no feedback group (p = 0.35), with no improvements from baseline values for any group. Conclusions: This suggests that a combination of KP and KR feedback is required to successfully manipulate the abstract phenomenon of volitionally prolonged airway closure during swallowing. These findings have implications for the type of feedback used by clinicians to teach swallowing manoeuvres.

15I.11 THE ROLE OF AUGMENTED FEEDBACK IN VOLITIONAL MANIPULATION OF AIRWAY CLOSURE DURING SWALLOWING

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Introduction: A necessary prerequisite to decannulate a tracheostomized patient is not only good management of saliva but also the exclusion of airway obstructions such as severe arytenoid edema and vocal cord paresis. In daily work with tracheostomized patients we observed a considerable rate of glottic stenosis which complicated decannulation management. Therefore, we wanted to examine the aetiology of the glottic stenosis in these patients to be able to better react to these complications and to accelerate the process of decannulation. Patients and methods: In the present retrospective study every patient with tracheostomy who was treated in our clinic between 2013 and 2015 was included. Every patient got at least one (or if necessary more than one) videolaryngoscopic examination of the larynx prior to decannulation attempt. It was recorded for every patient if there was a glottic stenosis (i.e. arytenoid edema and/or a vocal cord paralytic condition). Results: Comparing patient data from 2015 with previous years we recognized an increasing number of patients showing an arytenoid edema or in some cases even a vocal cord paresis. Investigating the possible cause, we found that we changed our nasogastric tube feeding protocol at the beginning of 2015 that favoured nasogastric tubes with a larger diameter. Conclusions: Glottic stenosis can occur as a result of different causes. Recent research points to a correlation of arytenoid edema and the presence of a nasogastric tube. Our findings not only support these results, they also show a correlation between the diameter of the nasogastric tube and the development of arytenoid edema and vocal cord paresis. Therefore, if possible, small diameter nasogastric tubes should be preferred and the insertion of a PEG-tube should be considered early (starting in week 3, as recommended in the German Guidelines) when long-lasting dysphagia is suspected.

15I.12 ARYTENOID EDEMA AND VOCAL CORD PARESIS FOLLOWING USE OF NASOGASTRIC TUBE AS COMPLICATIONS IN DECANNULATION MANAGEMENT OF TRACHEOSTOMIZED PATIENTS

P. Macrae; I. Taylor-Kamarz; C. Anderson; I. Humbert; 1University of Canterbury. Rose Centre for Stroke Recovery and Research; 2Johns Hopkins University; 3University of Florida

Introduction: As swallowing is an internal function, augmented biofeedback is often required to facilitate cognitive control over this process. While biofeedback has long been used to allow patients to visualize various aspects of swallowing, it is not understood how varied forms of feedback influence manipulation of swallowing movements. This research aimed to determine the type of augmented feedback required to volitionally extend laryngeal vestibule closure (LVC) during swallowing. Methods: Two studies were completed to determine the required biofeedback for LVC manipulation. In the first study, 16 healthy participants completed multiple trials of a volitional laryngeal vestibule closure (vLVC) technique under one of two conditions: knowledge of performance (KP) + knowledge of results (KR) feedback (N=9) or no feedback (N=7). KP feedback conveyed information on kinematic accuracy of LVC. KR feedback conveyed information only on whether the required duration of LVC was achieved. In the second study, an additional two groups of participants had KP only (N=9) or KR only (N=8) as feedback. Improvement was measured across vLVC trials, defined as an increase in LVC duration based on video fluoroscopy. Results: First study: the combined feedback group (KP+KR) improved performance across trials (p = .01), with no difference from baseline seen for the no feedback group (p = .66). The second study assessed if KP or KR feedback in isolation improved performance compared with no feedback. It was revealed that KP and KR feedback did not differ from the no feedback group (p = 0.35), with no improvements from baseline values for any group. Conclusions: This suggests that a combination of KP and KR feedback is required to successfully manipulate the abstract phenomenon of volitionally prolonged airway closure during swallowing. These findings have implications for the type of feedback used by clinicians to teach swallowing manoeuvres.
15I.13 FREE WATER PROTOCOL USE IN THE REPUBLIC OF IRELAND: CHALLENGES AND OPPORTUNITIES
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Background: Thickening liquids can result in reduced quality of life (QOL), poor compliance with diet recommendations and reduced fluid intake with risk of dehydration. The Free Water Protocol (FWP) attempts to combat these negative consequences by allowing people with thin liquid aspiration to consume unthickened water. Evidence suggests that FWP does not increase the risk of adverse events (e.g. aspiration pneumonia). Many facilities in Ireland are adopting variations of FWP. This study aims to examine the use of FWP by speech and language therapists (SLTs), determining what factors influence decision making on its use and identifying challenges and opportunities associated with implementing FWP in Ireland.

Materials and Methods: An online survey was disseminated via email in October 2015. SLTs working in Ireland were alerted to the survey through email lists, special interest groups and social media pages. A reminder email was sent one week before the survey closed. The survey remained open for 10 weeks.

Results: Sixty-four SLTs responded to the survey. Quantitative and qualitative data was provided regarding perspectives and practices in relation to the FWP. Significant variation was found in FWP regimes used and in data was provided regarding perspectives and practices in relation to the FWP. The majority of respondents were not implementing FWP. Challenges in implementing the protocol included unfamiliarity with the FWP and/or the associated evidence base, lack of training available, concerns re oral hygiene, staff support levels, and medical team familiarity with FWP. The majority of respondents were not implementing FWP.

Conclusions: While respondents identified the ability of FWP to increase QOL, diet compliance and reduce risk of dehydration, SLTs are hesitant to use it without conclusive evidence on FWP safety or standardised practice guidelines. A systematic review of the evidence is required with prospective well designed multi-centre clinical trials. Guidelines and proposals for these studies are provided.

15I.14 AN ECLECTIC APPROACH TO DYSPHAGIA MANAGEMENT WITH NMES AND SEMG: A CASE STUDY USING VS PLUS FROM SINGAPORE
R. Yasudeva1 1Rastravantiz PTE LTD

Introduction: Electrical stimulation (NMES) in Dysphagia Management is steadily growing in Asia, but the use of sEMG and a combination of sEMG+NMES is relatively new. We have seen publications from countries such as Thailand (Leelamanit V, 2002) and Korea (S.Y.Lee et al, 2012) on this. Launched during 2005 in Singapore, VitalStim therapy as a modality for dysphagia management has been growing in this part of the world. The latest addition to the modalities for Dysphagia Management is the VITALSTIM PLUS which offers the possibility of using sEMG and sEMG triggered stim as well as other custom options.

Purpose: This paper, a case study, reports therapeutic outcomes of an eclectic approach to Management of severe dysphagia with a client with post radiation for nasopharyngeal cancer.

Materials & Methods: The patient in this study had an initial clinical assessment followed by an objective assessment of swallowing with Functional Endoscopic Examination of Swallowing. He initially underwent daily therapy sessions of Electrical Stimulation using VitalStim therapy (NMES). The Stimulation lasts 45 minutes each session, while the patients consumed appropriate foods and fluids and also performed specially chosen oral-motor, voice or swallowing exercises. He was also given exercises to follow up at home. In April 2016 with the launch of the VS PLUS, he was started on a regime involving sEMG, then followed by SEMG triggered stim. Results: The client demonstrated improved swallowing as reflected by a series of outcome measures: FEES ratings, FOIS scores, clinical and subjective QOL reports. Conclusion: This study highlights the importance and clinical advantage of using a modality such as NMES and sEMG (as in VS PLUS) as an integral part of therapy even for clients with chronic dysphagia.

15I.15 SPECIFICITY OF ANTERIOR AND POSTERIOR TONGUE STRENGTHENING EXERCISES ON TONGUE STRENGTH
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Introduction: Tongue strengthening protocols often include both anterior and posterior tongue strengthening exercises (aTSE and pTSE) without fundamental support. This preliminary study aimed to compare the effects of isolated aTSE and pTSE on both anterior and posterior maximum isometric tongue-palate pressures (MIPa and MIPp).

Material & Methods: 16 healthy elderly (8 women, 8 men, mean age: 70-93) completed a TSE protocol (8 weeks; 8 days/week; 120 repetitions per session at 80% 1 RM). Group A (n=7) exclusively performed aTSE; group P (n=9) solely pTSE. MIPa and MIPp were measured at baseline, after 4 and 8 weeks of TSE and 4 weeks post therapy.

Results: Significant time (p<.001) and group (p<.05) effects were found for both MIPa and MIPp with an additional group*time (p<.001) effect for MIPa. Only aTSE resulted in significantly increased MIPa (+26 kPa in group A vs +5 kPa in group P; p<0.001). MIPp significantly increased in both groups (+19 in group A vs +13 kPa in group P; p=0.054). No significant detraining effects were present at 4 weeks post therapy. Conclusions: This pioneering study investigated the specificity of aTSE and pTSE. In this population, MIPa only demonstrated significant gains following aTSE, suggesting specificity for MIPa. MIPp was significantly and equivalently improved in both groups (aTSE & pTSE), suggesting lack of specificity for MIPp.
Poor oral hygiene is an aspiration pneumonia risk factor in patients with pneumonia and this cannot be considered a cause. It is possible that pneumonia (especially aspiration), but in many cases PN began after this study confirmed a strong statistical association between PN and aspiration pneumonia. Among 59 patients in PN with pneumonia, 48 had contracted the infection (73%) against 64/272 (24%) in non-PN patients group (p<0.001). In 3.8% (272/7179) of other patients, with an adjusted OR of 3.7 (IC95% 2.4-5.8). Pneumonia was diagnosed in 15.0% (59/392) of patients with PN and input conditions of patients and chronological order of events.

Results: To investigate the involvement of SLTs on medium care and/or intensive care units and to compare with published data from the UK. This part of the study focused on the Dutch hospitals. Methods: We constructed an online questionnaire in Dutch based on the one by McGowan et al. (IJLCD 2014; 49: 127-138) and used their technique to quantify agreement: high clinical consensus (HCC) when 75% gave a similar response and moderate (MCC) when 50-75% rated similar. It was sent to the SLT departments of 92 hospitals in the Netherlands. Results: Forty-three SLTs (47%) responded. There was HCC (76%) that SLTs on ICUs are always or usually involved with swallowing management, but only 17% received referrals for decanulation and 24% for communication. There was MCC (61%) about receiving referrals always or usually within 10 days after tracheotomy and there was MCC (59%) that referral time was consistent and appropriate. The majority (87%) of SLTs was not involved with oral, pharyngeal or tracheal suctioning. There was HCC (93%) about always or usually doing clinical assessment, while there was MCC (63%) to HCC (95% videofluoroscopy) about sometimes or never doing instrumental assessment on the ICU. When there was a multidisciplinary tracheostomy team, 55% of SLTs were involved. There was HCC about having the cuff deflated during swallowing assessment (87%) or treatment (91%). At the first swallow trial 81% uses water and 40% a thick consistency or both. Conclusion: On ICUs, Dutch SLTs have a primary role in swallowing management but less frequently use instrumental assessments, which is comparable with the UK. However, they are less involved with decanulation, communication and suctioning, which could be improved.


table 1

15J.01 ORAL HYGIENE AND ASPIRATION PNEUMONIA: RESULTS OF A RETROSPECTIVE OBSERVATIONAL STUDY
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Introduction: Poor oral hygiene, often associated with parental nutrition (PN), has been suggested as a risk factor for aspiration pneumonia, especially in institutionalized elderly people. This study was conducted in inpatients to assess whether the incidence of bacterial pneumonia in PN patients compared to similar non-PN patients. Materials & Methods: Hospital discharge records of patients admitted in 2014 in Presidio Molinette-Azienda Ospedaliera Città-aregrave- della Salute e della Scienza di Torino general medicine and geriatric wards have been analyzed. The association between PN and (bacterial or aspiration) pneumonia was estimated by computing Odds Ratio (OR), adjusted for age, sex and DRG weight, with a logistic regression model. For cases of pneumonia arisen in PN, medical records were consulted to establish the input conditions of patients and chronological order of events. Results: Pneumonia was diagnosed in 15.0% (59/392) of patients with PN and in 3.8% (272/7179) of other patients, with an adjusted OR of 3.7 (IC95% 2.7-5.0). In the PN group the aspiration pneumonia has been 43/59 (%) against 64/272 (24%) in non-PN patients group (p<0.001). Among 59 patients in PN with pneumonia, 48 had contracted the infection before the beginning of PN and only in 11 patients the infection occurred after the beginning of PN (8 during the hospitalization, no patients were fed exclusively with PN). Conclusions: The results of this study confirmed a strong statistical association between PN and pneumonia (especially aspiration), but in many cases PN began after pneumonia and this cannot be considered a cause. It is possible that a poor oral hygiene is an aspiration pneumonia risk factor in patients with PN since long time, but this etiology does not appear frequently during a hospitalization in an acute care hospital.

15J.02 INVOLVEMENT OF SPEECH-LANGUAGE THERAPISTS ON INTENSIVE CARE UNITS IN DUTCH HOSPITALS
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Introduction: In the Netherlands and Flanders (Dutch-speaking part of Belgium) most speech-language therapists (SLTs) in hospitals also work on intensive care units (ICU). However, little is known about their management patterns. The aim of this Dutch-Flemish study was to investigate the involvement of SLTs on medium care and/or intensive care units and to compare with published data from the UK. This part of the study focused on the Dutch hospitals. Methods: We constructed an online questionnaire in Dutch based on the one by McGowan et al. (IJLCD 2014; 49: 127-138) and used their technique to quantify agreement: high clinical consensus (HCC) when 75% gave a similar response and moderate (MCC) when 50-75% rated similar. It was sent to the SLT departments of 92 hospitals in the Netherlands. Results: Forty-three SLTs (47%) responded. There was HCC (76%) that SLTs on ICUs are always or usually involved with swallowing management, but only 17% received referrals for decanulation and 24% for communication. There was MCC (61%) about receiving referrals always or usually within 10 days after tracheotomy and there was MCC (59%) that referral time was consistent and appropriate. The majority (87%) of SLTs was not involved with oral, pharyngeal or tracheal suctioning. There was HCC (93%) about always or usually doing clinical assessment, while there was MCC (63%) to HCC (95% videofluoroscopy) about sometimes or never doing instrumental assessment on the ICU. When there was a multidisciplinary tracheostomy team, 55% of SLTs were involved. There was HCC about having the cuff deflated during swallowing assessment (87%) or treatment (91%). At the first swallow trial 81% uses water and 40% a thick consistency or both. Conclusion: On ICUs, Dutch SLTs have a primary role in swallowing management but less frequently use instrumental assessments, which is comparable with the UK. However, they are less involved with decanulation, communication and suctioning, which could be improved.

15J.03 INVOLVEMENT OF SPEECH-LANGUAGE THERAPISTS ON INTENSIVE CARE UNITS IN FLEMISH HOSPITALS (BELGIUM)
A. -S. Beeckman3; T. Dehouck2; H. Kalf1 1Postgraduate Dysphagia, Artevelde University College; 2AZ Delta, Roeselare; 3Radboud University Medical Center
Introduction In the Netherlands and Flanders (the Dutch-speaking part of Belgium) most speech-language therapists (SLTs) in hospitals also work on intensive care units (ICU). However, little is known about their management patterns. The aim of this Dutch-Flemish study was to investigate the clinical practice of SLTs working on intensive care units and to compare with published data from the UK. This part of the study focused on the Flemish hospitals. Methods: We constructed an online questionnaire in Dutch based on the one by McGowan et al. (IJLCD 2014; 49: 127-138) and used their technique to quantify agreement: high clinical consensus (HCC) when at least 75% gave a similar response and moderate (MCC) when 50-75% rated similar. Results: 41 SLTs responded. There was MCC that SLTs on ICUs are always or usually involved with swallowing management (66%) and communication (51%), but only 22% received referrals for decanulation. There was MCC (71%) about receiving referrals always or usually within 10 days after tracheotomy and there was MCC (54%) that referral time was always or mostly appropriate and consistent. The majority of SLTs was not or seldom involved with tube choice (88%) or with oral, pharyngeal or tracheal suctioning (71%). There was HCC for clinical bedside assessment (85%), while there was MCC (73%) about sometimes or never doing videofluoroscopy on the ICU. 49% uses FEES usually or always as instrumental assessment. At the first swallow trial 90% uses thick consistency and 63% liquids. There was MCC (60%) that SLTs are never or seldom involved in the decanulation process. Conclusions: On ICUs, Flemish SLTs have a primary role in swallowing management, which
15J.04 DYSPHAGIA, FOOD AND SOCIAL NETWORKS: RICETTA SOFFICE

CONTEST A NEW EXPERIENCE OF DYSPHAGIA GROUP AUSL PIAZZENA M. Benvenuti1; R. Antenucci2; R. Raggi2; C. Cardinale3; B. Olizzi1; S. Barbieri1; D. Cuda1 / 1UOC Gastroenterology AUSL Piacenza; 2UOC Rehabilitation Medicine Castel S.Giovanni AUSL Piacenza; 3UO US Rehabilitation Medicine Villanova AUSL Piacenza; Communication & Marketing AUSL Piacenza; INTRODUCTION The AUSL of Piacenza Dysphagia Group was set up to assess and rehabilitate people with dysphagia by integrating multi-professionalism and multidisciplinarity. The group’s first aim was to improve the knowledge of other healthcare staff and then to increase its activities by pursuing objectives of wellbeing and wellness. Therefore the health activity has met the food and wine sector: the group is, in fact, strongly convinced that people can be dysphagic without giving up the taste and the pleasure of food, recovering precious and indispensable convivial moments with their families. Michelin-Starred chefs from Piacenza were involved. With the collaboration of the AUSL Communications and Marketing office, a book was written, with a first part containing an explanation of the health aspects of dysphagia, followed by recipes by the chefs as well as simple household recipes. The interest that has arisen from the book has motivated the group to create a competition for recipes with modified consistencies in order to spread the theme of dysphagia and the best types of nutrition. MATERIALS AND METHODS The diffusion and advertising of the recipe competition was supported by the media, social networks and the internet. RESULTS About 30,000 users were reached, 8,500 of which hit the “like” button on the competition page on FB. The publication of a cooking video recorded by food blogger G.Golino (viewed by 268,1 users) and the participation of Antonino Cannavacciuolo, an award-winning chef, a familiar face on TV and Masterchef judge (viewed by 14,114 users) have further increased the audience. 75 recipes were received and a special jury selected 10 finalist recipes that were published on the institutional page of AUSL of Piacenza: 12,000 users viewed the outcome of the competition. CONCLUSIONS Dysphagia Group AUSL Piacenza wanted to show how knowledge can be created on the theme by using different formats than health ones and taking advantage of social networks.

15J.05 MANAGEMENT OF PATIENTS WITH SWALLOWING DISORDER: OUR EXPERIENCE

L. Crema1; S. Moretto1; G. Chiarello1; R. Merlo1; A. Pastore1 / ENT Department, University Hospital of Ferrara; INTRODUCTION Oropharyngeal dysphagia is a swallowing disorder defined by the difficulty to move the alimentary bolus from the mouth to the esophagus. It is a common condition that affects up to 13% of the total population aged 65 years and over. The prevalence rate is high in the elderly population, in neurological diseases and after HNC treatment. The management of this condition is complex given the fact that several specialists are involved. MATERIAL AND METHODS: 354 adult patients were assessed in our clinic for a swallowing disorder from January 2014 to April 2016. The protocol used for dysphagia evaluation consists of three sections: medical history, clinical assessment and instrumental investigation. Clinical evaluation was performed by a speech therapist and included a morpho-dynamic exam, identification of reflexes, motor function and food intake. In the protocol, the Fiberoptic Endoscopic Evaluation of Swallowing (FEES) was defined as the standard instrumental exam used for dysphagia diagnosis. RESULTS: The group of study included 198 males and 156 females, the mean age was 71 years. 56% of patients suffered from neurological diseases, such as Parkinson or stroke. Other causes of dysphagia were due to rheumatic diseases (5%), surgery for head and neck tumours (3%) or radiotherapy (2%). The main symptom was attributed to changes in the oropharyngeal (42%) and esophageal (13%) phases of the swallowing process. 60% of patients received a counselling by a speech therapist. CONCLUSIONS: Oropharyngeal dysphagia is a highly prevalent in the population although it is rarely detected or treated. In our clinic, the protocol for phoniatrics-logopedic evaluation of dysphagia and the collaboration between many medical disciplines allows diagnosis and treatment of swallowing disorders.

15J.06 TO EVALUATE THE MANAGEMENT PATHWAY AND CLINICAL FEATURES OF LUNG CANCER PATIENTS PRESENTING WITH OROPHARYNGEAL DYSPHAGIA

D. Curtin1; S. Archer1 / Guy’s and St Thomas’ NHS Foundation Trust; Introduction: Lung cancer is the most common cancer in the world. These patients often develop oropharyngeal dysphagia (OD); however research describing the population and supporting the role of Speech and Language Therapy (SLT) is limited. Materials and Methods: A service evaluation was completed on all lung cancer patients referred to SLT for swallowing assessment at a London hospital over 3 months. Data were collected on demographics, diagnosis, treatment, dysphagia, OD classification and SLT management. Time from onset of OD to SLT referral was recorded along with whether information about OD had been provided. Results: Data were collected on 16 patients (9 male), mean age 67.5yr, including 11 inpatients. The most frequent tumour site was the upper lobe (56.3%, n=9), with 37.5% (n=6) stage T4. The majority (68.8% n=11) had severe OD, 81% (n=13) required instrumental swallowing assessment and 81% (n=13) had dysphonia. Most (87.5%) reported not receiving information about OD at diagnosis. Of the seven patients referred during chemo/radiotherapy, 6 (86%) had severe dysphagia and there was a median time from onset of OD to SLT referral of 60 days. Seven were referred post surgery, of which 3 (43%) had severe dysphagia with a median onset to referral time of 7 days. One patient was referred when palliative with severe OD and symptoms for 9 days before referral. Conclusion: This study gives an insight into an under-reported population of patients with lung cancer and OD. It suggests that OD may be more common in patients with tumours in the upper lobe and tumours of advanced stage and that OD is associated with dysphonia. It suggests that patients with lung cancer develop severe OD and require instrumental assessment but that there is a marked delay from symp-
imply that Iranian HCPs have acceptable knowledge about dysphagia but need further training in dysphagia field. Conclusion: The results showed that a significant percent of participants (87.30%) never used formal tests for dysphagia knowledge, Most of the participants (81.80%) needed further training in dysphagia field. Conclusion: The results imply that Iranian HCPs have acceptable knowledge about dysphagia and they believe in team working to manage their patients but deficiencies in practice are the most important problem. There is a need to establish multidisciplinary teams in dysphagia management. Dysphagia management guidelines, curriculum and formal tests should be developed in Iran according to our facilities and culture.

15J.07 EVALUATING KNOWLEDGE, ATTITUDE AND PRACTICE OF HEALTH - CARE PROVIDERS REGARDING DYSPHAGIA IN IRAN/SHIRAZ

Introduction: In order to improve the condition of patients with dysphagia there is a need to view it in a multidisciplinary manner. Knowledge, attitudes and skills of Health Care Providers (HCPs) are essential requirements for their professional awareness and competence. The aim of this study is to analyze the knowledge and awareness of HCPs in Iran / Shiraz about dysphagia to distinguish gaps which need to be filled in order to improve the quality of care for these patients. Method: Fifty five participants from different professionals who work in two referral hospitals in Shiraz participated in this study. They all answered to a validated and reliable researcher - made questionnaire consisting of: 1 yes - no question and 10 correct - incorrect questions about the dysphagia knowledge , 4 open - end questions about the participants attitudes in team working and 7 open - end questions about the ways of diagnosis, assessment and treatment of dysphagia. The data was statistically analyzed by means of SPSS version 22. Results: Mean of working experience was 118.96 month. Participants showed acceptable knowledge (mean of 8.25 correct answers out of 10 questions). Most of them (85.50%) believed that they can help dysphagia patients. Participants (92.70%) prefer to refer their patients to different disciplines. Significant percent of participants (87.30%) never used formal tests for diagnosis and assessment of dysphagia. Most of the participants (81.80 %) needed further training in dysphagia field. Conclusion: The results imply that Iranian HCPs have acceptable knowledge about dysphagia and they believe in team working to manage their patients but deficiencies in practice are the most important problem. There is a need to establish multidisciplinary teams in dysphagia in which all disciplines introduce their roles in dysphagia management. Dysphagia management guidelines, curriculum and formal tests should be developed in Iran according to our facilities and culture.

15J.08 THE ISLINGTON CARE HOME SPEECH AND LANGUAGE THERAPY DYSPHAGIA PILOT PROJECT - 2014 - 16

M. Humphrey1) Whittington Health

Dysphagia Competencies in Care Homes. This one year service evaluation pilot project included over 500 care staff across 8 care homes in a competency based training and education programme. The UK Inter Professional Dysphagia Framework (2006)(1) was used to agree a local competencies schedule with the Lead Nurse for Quality Improvement in these Care Homes. This was the1st of 3 documents developed for a largely non registered staff group. Method: 2 - 4 Nutrition and Dysphagia Champions identified by each Care Manager had training in the area of Dysphagia (and Nutrition) care and how to train others. This supported a ‘Train The Trainer’ approach in disseminating knowledge and skills in care homes. Training modules prepared for the Champions, included 10 core sessions linked to the Competency Framework. Audits measuring staff competencies and confidence in offering dysphagia care, hospital admissions related to dysphagia care and referrals to Community Speech and Language Therapy (SLT) were integral to this project. The 3 audit points in each care home occurred prior to training, after training Champions and finally during unannounced visits after Champion led sessions. The audit schedule used the UK Care Quality Commission’s Standards for observing meal times, environmental factors, Dysphagia Knowledge questionnaire, staff experience and resident satisfaction measures. Results: At project end there was: * 4.7% care staff completed competencies * improved confidence in dysphagia skills. * improved referrals to Community SLT. * avoidable hospital re-admissions could not be reported. * improved scores on knowledge questionnaire for all staff groups, greater for the Champions. * small improvement on supporting feeding & environmental factors. * resident satisfaction unchanged. * a project extension funded. Conclusions: The team considers factors for successful training and gaining dysphagia competencies in this care setting.

15J.09 PATIENTS WITH SEVERE ACQUIRED BRAIN INJURY AND CUFFED TRACHEOSTOMY TUBES: A MULTIDISCIPLINARY APPROACH TO DECANNULATION MANAGEMENT

A. Kjaersgaard1; V.L. Funch Madsen1) Hammel Neurorhabilitation Centre and University Research Clinic.Funch

Introduction: Safe removal of the cuffed tracheostomy tube is an important goal in the rehabilitation of patients with severe acquired brain injury. Decannulation is a complex and multidisciplinary process, which considers various aspects from cognitive to critical issues such as protecting the respiratory tracts. We believe that Hammel Neurocentre’s more than 10 years of experience with a systematic, multidisciplinary approach (occupational therapist, physiotherapist, nurse and physician) to decannulation management can be of clinical interest although we do not have research results to present. Material & Methods. Patients with acquired brain injury and a cuffed tracheotomy tube because of respiratory dysfunctions or severe dysphagia with high incidence of saliva aspiration. Every weaning process is customized the individual patient, but follows a standardized decannulation protocol based on the Facial-Oral Tract Therapy approach. A main component of decannulation management is the process of cuff deflation and stimulation of swallowing and coughing functions via the respiratory airflow through the larynx and upper airway while the cuff is deflated. The criteria for decannulation of the patient: cough reflex, swallowing movements, ability to swallow saliva, reduced need for suction, no pneumonia or other infections and no gastroesophageal reflux or vomiting difficulties. If the patient fulfills the criteria, a fiberoptic evaluation of swallowing will be performed to evaluate the anatomy and sensibility before deflation attempt to see how he handles his saliva both with an inflated and a deflated cuff. Occupational therapists have the main responsibility for...
the treatment of such patients and begin their treatment on the day of admission. An occupational therapist performs the first evaluation of the deflation attempt and produces together with the multidisciplinary team a treatment plan with deflation at increasing intervals. When the patient can tolerate deflat

**15J.10 DIFFICULTY IN TAKING MEDICATION FOR PATIENTS WITH NEUROLOGICAL DISEASES**

S. Nozaki1; S. Katsuragi2 / Hammel Neurorehabilitation Centre and University Research Clinic, Funch; 3Hyogo University of Health Sciences

Purpose Difficulty in taking medication results in inaccurate judgments of the effects of treatment with oral medication and impairs medication adherence. We investigated the present situation with regard to difficulty in taking medication for patients with neurological diseases and examined the issues. Methods Difficulty in taking medication is defined as cases in which a patient experiences difficulty swallowing or choking on drugs, has to swallow three or more times, has to wash down medication with water or jelly, has drug residue or a feeling of residue in the oral cavity, pharynx, or esophagus, or coughs up drugs. We examined 136 patients (26 facilities) with neurological diseases aged 65 years and older who were deemed to have difficulty taking medication by a medical professional specializing in dysphagia. Results The underlying disease was cerebrovascular disorder in 57% of patients and Parkinson’s disease in 22%. Drug residue was seen in the oral cavity and pharynx in any dosage form in 55% of patients with medication difficulties. Medication was self-administered in 27% of patients, regular meals of a non-modified diet were consumed by 34% of patients, and swallowing screening tests were normal in 33% of patients. Conclusions Medication difficulties are thought to occur regardless of the dosage form, medication independence, or regular meal texture. Clinical observation and cooperation by medical staff responsible for medication management are therefore necessary. Fig. 1 Orally disintegrating tablets adhere to the upper jaw of full dentures. 2 hours after medication (arrow). Fig. 2 Tablets became caught in the epiglottic vallecula and could not be dislodged no matter how many times water was swallowed (arrow)

**15J.11 PSYCHOLOGICAL IMPACT OF THE NICU ENVIRONMENT: IT’S MORE THAN MEETS THE EYE**

J.M. Pusins1; A.M. Alduraibi2 / Nova Southeastern University; 2King Fahad Medical City

Introduction: Clinicians in the Neonatal Intensive Care Unit (NICU) are often faced with handling stressful situations surrounding the management of feeding difficulties of the preterm infant. In addition to providing feeding guidance, the clinician also has an important role in understanding and supporting the infant’s family at this time of heightened stress. Methods: A literature review was conducted with studies of qualitative, quantitative, and mixed quantitative-qualitative designs included. Results: Based on published evidence, the impact of preterm birth and the NICU environment has the potential to result in post-traumatic syndrome, increased stress and anxiety levels, and atypical attachment and bonding between the family and infant. It is essential that the clinician understand the psychological impact on the patient’s family to ensure that effective and efficient communication, education, and support can be provided to empower the family unit through this difficult transition. Conclusion: During this presentation, two clinicians with years of NICU experience will discuss the research evidence on the stressors of the NICU environment, potential adverse impact of the parent-infant relationship, and appropriate coping strategies to assist the family in their time of need. Specific feeding related stressors and approaches to management will be presented to assist the clinician in providing evidence based treatment with an understanding of the psychological needs of the family unit.

**15J.12 DIAGNOSIS AND MANAGEMENT OF UNDERNUTRITION IN PATIENTS ASSESSED IN AN OROPHARYNGEAL DYSPHAGIA UNIT**

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Introduction: Dysphagia may cause a decrease in the efficacy of deglutition, leading to malnutrition. Nutritional assessment methods should be used routinely by dietitians in patients assessed in an Oropharyngeal Dysphagia (OD) unit. To determine the nutritional status of a patient with dysphagia is the first step to get a correct dietetic advice or nutritional support indication. Material & Methods: All patients referred to OD unit in the first semester of year 2015 were studied. Nutritional status was assessed by Subjective Global Assessment (SGA) and dysphagia by Fiberoptic Endoscopic Evaluation of Swallowing (FEES). Undernutrition management was classified in 3 categories: dietic advice, nutritional supplements and tube feeding – ostomy indication. Results: 45 patients; Average age 60.5 (±16.7 years) 40% of whom were women. 52.3% were neurologic patients and 17.8% were oncologic patients. 64.4 of patients referred to OD unit presented dysphagia. 29.3 % of patients with dysphagia presented undernutrition. 70% of malnourished patients presented a deglutition efficacy alteration, 20% of whom added deglutition safety alteration too. 86.2%, 20.7% and 27.6% of patients with dysphagia needed dietetic advice, nutritional supplements and tube feeding – ostomy
needed. Very few studies on this topic have been published. There is a lack of disorders and depression may be prevalent in OD patients. However, to methodological quality. Therefore, a meta-analysis could not be carried out. The search was limited to English, Dutch, French, German and Spanish publications. Twenty-eight studies met the inclusion criteria. Two independent reviewers assessed the methodological quality of the included studies. Results: Studies revealed heterogeneity concerning outcome and most of them had limitations with regard to methodological quality. Therefore, a meta-analysis could not be carried out. Although no meta-analytic conclusions can be drawn, in particular symptoms of anxiety and depression appear to be common in dysphagic patients. Conclusions: Caregivers have to be aware of this problem, and screening for affective symptoms could be helpful. Possibly, other psychiatric symptoms or diagnoses than anxiety disorders and depression may be prevalent in OD patients. However, very few studies on this topic have been published. There is a lack of therapy effect studies and well-designed prospective research is needed.

15J.13 PSYCHOPATHOLOGY IN PATIENTS WITH OROPHARYNGEAL DYSPHAGIA: A SYSTEMATIC REVIEW
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Introduction: This systematic review summarizes and qualitatively analyses published studies investigating psychopathology in patients with oropharyngeal dysphagia (OD). The review was performed to determine if OD and psychopathology showed any (causal) relationship and if integrated treatment or therapy effect for both conditions had been reported. Material & Methods: A literature search, using electronic databases Embase, Medline, Web-of-science, PsycINFO, PubMed publisher, Cochrane Library, and Google scholar, was carried out. The search was limited to English, Dutch, French, German and Spanish publications. Twenty-eight studies met the inclusion criteria. Two independent reviewers assessed the methodological quality of the included studies. Results: Studies revealed heterogeneity concerning outcome and most of them had limitations with regard to methodological quality. Therefore, a meta-analysis could not be carried out. Although no meta-analytic conclusions can be drawn, in particular symptoms of anxiety and depression appear to be common in dysphagic patients. Conclusions: Caregivers have to be aware of this problem, and screening for affective symptoms could be helpful. Possibly, other psychiatric symptoms or diagnoses than anxiety disorders and depression may be prevalent in OD patients. However, very few studies on this topic have been published. There is a lack of therapy effect studies and well-designed prospective research is needed.

15J.14 APPLYING “TWORKAM” METHODOLOGY AMONG MEDICAL STAFF TO GAIN NEW SKILLS OF PREMATURE NEWBORNS ORAL FEEDING
E. Winnicka1; J. Smogorzewska2; G. Szumski1,2 The Children’s Memorial Health Institute; 1The Maria Grzegorzewska Academy of Special Education
Introduction: Preterm newborns are at higher risk of feeding disorders due to their immaturity. Special technique increases feeding efficacy and safety. The opinion that infants’ feeding requires neither special skills nor certain mental predispositions is incorrect, caused mainly by ignorance and cultural beliefs. This may result in refusing new knowledge and sustaining old working schemes, which are insufficient for specific preterm newborns needs. Based on these deliberations, trainings should enable both gaining new skills and creating transformative learning, which changes thinking and perceptive schemes and role of person who feeds premature newborns. The aim of this study is to verify the effectiveness of training based on transformative learning assumptions (TWORKAM methodology). Material & methods: 31 nurses in 5 different Neonatal Intensive Care Units participated in trainings according to TWORKAM methodology. These trainings were focused on changing old habits and cognitive schemes concerning preterm newborn feeding and developing feeding skills such as: working with infant’s body (1), selecting feeding accessories (2), a selection of oral control and dynamic stabilization (3) and recognizing the signs of baby’s readiness to start and to finish feeding (4). The level of transformative learning and feeding skills of nurses were examined at the beginning and at the end of training. Results were analyzed with ANOVA. Results: Analysis has shown a significant difference in the level of transformative learning between pre- and posttest: F(3.90)=13.96; p=0.0001; \eta^2=0.32. Significant differences were also identified in the case of the level of all feeding skills: (1) F(1.28)=219.73; p=0.001, h²=0.89; (2) F(1.28)=35.88; p=0.001, h²=0.64; (3) F(1.28)=232.96; p=0.001, h²=0.89; (4) F(1.28)=183.74; p=0.001, h²=0.87. Conclusion: Training based on TWORKAM methodology is effective in changing old habits (transformative learning) and in gaining new feeding skills.

15J.15 INVESTIGATION OF THE RELATIONSHIP BETWEEN DYSPHAGIA SEVERITY OF THE PATIENTS AND ANXIETY LEVEL OF THEIR CAREGIVERS
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Introduction: Besides dysphagia affects an individual’s emotional status and quality of life, caregivers also have fear during food preparation, feelings such as anxiety, guilt, anger, and despair. We aimed to show the relationship between dysphagia severity of the patients and anxiety level of their caregivers. Material & Methods: The study included patients who suffered from dysphagia and their caregivers. The dysphagia severity was determined with the Eating Assessment Tool (EAT-10) for adult patients and the Pediatric Eating Assessment Tool (PEDI-EAT-10) for pediatric patients. The anxiety level of the caregivers was measured by the State-Trait Anxiety Inventory (STAI) before the videofluoroscopic swallowing study (VFSS). Results: 52 patients (34 pediatric patients; mean age 4.2±1.87 years; 18 adult patients; mean age 51.89±13.09 years) and their caregivers were included. The mean PEDI-EAT-10 was 17.59±11.39 (min=1, max=49), the mean EAT-10 was 21.56±12.43 (min=2, max=40). The immediate anxiety of the caregivers was 43.5±7.87 (min=26, max=61), the long lasting anxiety was 47.67±7.31 (min=32, max=62). A positive correlation between immediate anxiety of the caregivers and dysphagia severity (p=0.04, r=0.28) and no correlation between long lasting anxiety of the caregivers and dysphagia severity (p=0.38) were found. Conclusions: We concluded that the correlation between immediate anxiety of the caregivers and dysphagia severity was reasonable because the instruments were applied just before VFSS and the wonder of the caregivers about the VFSS results may affect the momentary mood. Thus, when the dysphagia severity increased, the immediate anxiety levels increased and when the dysphagia severity decreased, the immediate anxiety levels also decreased. We also thought that caregivers got used to the situation of
their patients and the dysphagia severity did not have a relation with their anxiety levels in their daily lifes.

15J.16  A SAFER APPROACH TO RISK FEEDING
D. Hansjee1/ Lewisham & Greenwich NHS Trust
Introduction. The decision-making process regarding whether to introduce artificial nutrition and hydration or continue to allow food and drink orally once swallowing becomes unsafe, encompasses difficult ethical decisions for professionals, patients and carers. A risk feeding protocol was devised to guide acute teams through a decision making process promoting patient choice and quality of life. Material & Methods: A retrospective audit was carried out on patients referred to speech and language therapy from an elderly care ward over a month. Medical case notes were reviewed to establish the number of days from admission to when a nutrition plan was put in place. In order to ascertain the impact of the risk feeding protocol, an audit was conducted 6 months later. Results: The initial audit reflected considerable delays in nutrition planning with an average delay of 6 days. A significant decrease of more than 50% in the number of days taken towards putting a nutrition plan in place was evident following the introduction of the protocol. Conclusions: Having a structured and supportive framework is effective in guiding ethical decision making in this cohort. The protocol is easily transferable to healthcare settings nationally and globally.

**Number of days from Admission to Nutrition Plan**

- **Before**: 14 patients took 15 days, 11 took 10 days, 10 took 7 days, 2 took 2 days, 1 took 1 day, 0 took 0 days.
- **After**: 12 patients took 15 days, 2 patients took 2 days, 2 patients took 2 days, 0 patients took 0 days.
Abstract Book

Index of authors
The clearest solution for dysphagia
care is...
“Making a clear difference to mum’s mealtimes.”

Patients with dysphagia may require a texture-modified diet to ensure a safer swallow.

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