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Swallowing Disorders and Older Adults

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Normal Swallowing

1. Includes an integrated, interdependent group of complex feeding behaviors

2. Interact with cranial nerves

3. Governed by neural regulatory mechanisms in the medulla, sensorimotor, and limbic cortical systems

4. When there are no issues... an individual will perform sequential sensory and motor patterns of mastication and swallowing with little effort or conscious awareness.
Dysphagia

Is a disorder of or difficulty swallowing

The term dysphagia should refer to oral, pharyngeal, oro-pharyngeal or esophageal dysphagia

It is NOT a primary medical diagnosis but a SYMPTOM of an underlying disease

We describe dysphagia by “clinical signs”
Clinical Characteristics (SIGNS) of Oropharyngeal dysphagia

<table>
<thead>
<tr>
<th>Coughing</th>
<th>Odynophagia or “painful swallowing”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choking during or after a meal</td>
<td>Drooling</td>
</tr>
<tr>
<td>Food sticking</td>
<td>Unexplained weight loss</td>
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<tr>
<td>Regurgitation</td>
<td>Nutritional deficiencies</td>
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</tbody>
</table>
Conditions that contribute to dysphagia

- Neurologic diseases
  - Stroke
  - TBI
  - Dementia
- Motor neuron disease
  - Myasthenia Gravis
  - Cerebral Palsy
  - Guillain-Barre Syndrome
  - Poliomyelitis
  - Infectious Disease
  - Myopathy
- Progressive diseases
  - Parkinsonism's
  - Huntington’s disease
  - progressive nuclear palsy
  - Wilson’s disease
  - Age related changes
Conditions that contribute to dysphagia

• Connective Tissue disorders
  • Poly and dermatomyositis
  • Progressive systemic sclerosis
  • Sjogren’s disease
  • Scleroderma

• Structural diagnosis
  • Any tumor involving the alimentary tract

• Iatrogenic diagnosis
  • Radiation
  • Chemo
  • Intubation or tracheostomy
  • Cervical spine fusion
  • Bypass surgery

• Respiratory compromise and psychogenic disorders
Physiological Changes in swallowing

Delay in propulsion of the bolus from mouth to stomach

Misdirection of bolus (larynx, trachea, lungs)

Not all patients with physiological abnormalities have dysphagia

Only when medical complications or eating habits result in perceptible changes like malnutrition or aspiration pneumonia the patient is truly dysphagic.
Dysphagia is NOT....

- An impairment in the process of food transport (plate to mouth)
- A feeding or eating disorder
- Weakness or incoordination of hands or arms
- Anorexia or Bulimia nervosa (eating disorder) typically no complaints of swallowing difficulty
Incidence and Prevalence

1. Incidence is difficult to determine due to different settings (acute, rehab, chronic)
2. Prevalence is more important
3. ASHA estimates 6-10 million Americans with some degree of dysphagia
4. 300,000-600,000 persons in U.S. each year affected by dysphagia from Neuro disorders alone
5. Most common- stroke
Prevalence by setting

- Community-aging population 16-22%
- Acute and chronic geriatric care 60% in U.S.
  - Mortality incidence 45% after one year stay
- Acute general hospitals 13%

- Acute Rehabilitation
  - 102/307
  - 51 patients as a result of stroke
  - TBI (20%) Most Severe
  - Spinal cord injury or brain tumor (7%) Least Severe
  - Progressive neurologic disease (5%)
Prevalence by Dx

STROKE

• Acute (less than 5 days) more than 50% of patients
• 2 weeks post onset approx. 28%
• 6 months 3%
• Early detection important
• Some patients will spontaneously recover
Prevalence by Dx
Head and Neck CA

- Tissue loss
- Radiation therapy
- Chemotherapy
- 59% present with dysphagia
Prevalence by DX
TBI

• Common after TBI

• Incidence 27-30%

• More severe the injury, higher the incidence

• If patient goes to rehab, chances of oral feeding are good
Prevalence by DX
Progressive Neurological disease

- Parkinson’s: common
- Dementia: 13%-57%
- ALS: bulbar, first symptom
  - 1/3 of ALS patients will present with dysphagia
- Multiple Sclerosis: 33% chewing or swallowing
- Myasthenia Gravis: 1/3 of diagnosed patients
- Muscular Dystrophy: 2⁰ muscle weakness
Prevalence by Dx
Connective Tissue

• Polymyositis and Dematemyositis unknown
• Rheumatoid Arthritis 27%
• Scleroderma 90%
• Erosive esophagitis 60%
• Sjogren’s Syndrome 75%
Prevalence by Dx
miscellaneous

• Developmental disability or delays:
  • 36% in the community
  • 73% of inpatients

• Concomitant mental and physical disability: 8.1%

• Adults with Down’s syndrome: 56.5%

• Mental Illness: 9%-42%

• Premature Infants: < 26 weeks gestation: 90% prone to disorders of swallowing and feeding

• Spinal cord injury: 38%
Consequences of dysphagia

- Quality of life
- Morbidity and mortality
- Aspiration pneumonia
- Dehydration
- Poor nutritional status
- Decreased energy levels
- Compromised immune system
- Delays in healing
- Psychosocial
Clinical Management

Screenings (Pass/Fail)

Clinical examination (medical, psychosocial hx, physical exam, screen mental status, evaluated musculature of head and neck, trial swallows…if patient fails…)

Instrumental examinations…FEES (x-ray), MBSS, (direct visualization), Manometry (pressure)

• Appropriateness of these procedures should NOT be driven by administrator, payor source…if clinician is asking for orders to treat physiological change they need IMAGING first!
Treatment (intervention) Options

Behavioral
Dietary
Medical
Surgical
Behavioral Interventions
compensatory techniques

Temporary measures (should not leave patient using these techniques)

Change of posture

Change eating rate
Rehabilitative strategies
First line of defense!

- New way to swallow
- Strengthening muscles (isometric and isotonic holds)
- Implementation of Neuroplastic Principles
- Exercised based intervention
Dietary Interventions
last resort

- Modification of texture
- Taste
- Volume
- Viscosity
Medical Interventions

- Medicinal changes
- Mental status
Pharmacologic management

- Anti-reflux medication (GERD/LPR)
- Prokinetic agents (gastric motility, increase LES pressure, promote gastric emptying)
- Salivary management: many medical conditions can alter saliva (reduce watery saliva needed for swallowing)
  - Mucolytic can be used to thin secretions
What do labs have to do with dysphagia?

- WBC (white blood count)
- RBC (red blood count)
- ABGs (blood gases)
- Hydration & electrolytes
- BMI (body mass index)
- Albumin and pre-albumin
- Peripheral Oxygen Sat (SpO2)
- Respiratory rate (RR)
Labs and dysphagia

- Elevated WBC = infection of immune system
  - Possible new infiltrates
- Dysphagia clinician should pay attention to neutrophils on the (CBC)…
- Neutrophils are first responders to microbial infection (present in oral cavity…destroys pathogens)
- Times of stress, injury, illness, neutrophils are depressed…protective chemistry of oral cavity is altered (over colonized with pathogenic bacteria
- If aspirated could turn into infection
- Triple threat of aspiration pneumonia (stress of critical illness, temporary neutropenia, and aspiration of colonized oral pharyngeal bacteria
- Elevated ANC (absolute neutrophil count) is elevated too = bacterial infection
Labs and Dysphagia?

RBC Low values = anemia, blood loss, protein-energy malnutrition, nutrition deficiencies, chronic disease, B12 and Folate deficiencies (Mills and Ashford, 2008)

Symptoms = fatigue, loss of energy, shortness of breath, difficulty concentrating, dizziness….
Labs and Dysphagia?

- ABGS (arterial blood gases) = ex.
  Ventilator patient making good progress. Progresses to Passy Muir Valve two hours a day, team draws for ABG…what should we be checking for?

- Hypoventilation, abnormal CO2 retention and acidosis
- Decrease in pH (acid)
- Increase in PaCO2 (carbon dioxide)
- More accurate measure of SaO2 % (Oxy. Sat) than peripheral oxygen saturation
Labs and Dysphagia

- Hydration and electrolytes (blood/urea, Nitrogen (BUN), creatine (creat), and sodium (Na))
- Dehydration is the MOST common dysphagia-associated major disease comorbidity (Altman et al., 2010)
- Dehydration can artificially increase albumin, RBC, potassium, and chloride
- Significant mental status change: check changes in ammonia (liver issues)
- Low potassium (hypokalemia) = weakness and fatigue
- Low calcium (hypocalcemia) mental status change, depression, extrapyramidal symptoms, neuromuscular irritability (numbness around mouth, twitching, spasms, muscle cramps) rad and chemo patients are at risk!
Labs and Dysphagia

- BMI (Body Mass Index)
- Worried about your patient’s baseline frailty? Refer to Nutritionist/Dietician
- Cachexia (wasting), poor intake, weight loss, ability to meet caloric and hydration needs
- Rule of thumb: loss of 10 # or more in 30 days or less should be automatic referral to speech pathology for CSE
Labs and Dysphagia

- **Albumin and pre-albumin**
  - Not always a good marker; most flawed marker (Bahn, 2006)

- Nutrition is tied to strength of immune system (Mills & Ashford, 2008)

- Artificially elevated in dehydrated patients

- If patient is aspirating, but normally hydrated, albumin of 2.0 (normal 3.5-5.0 g/dL)...may indicate weak immune response (hypothesis could be flawed...so check other labs to help)

- Increase in Al or PAB maybe a result of improvement in overall clinical status, not necessarily improved nutritional status (Lebanh, 2006)
Labs and Dysphagia

- **SpO2 (Peripheral O2 saturation)**
- Used to assume: aspiration = drop in peripheral O2 saturation rate

- Leder (2000) concluded that oxygen saturation does not correlate with aspiration… “O2 dos not appear to be a clinically relevant indirect marker of aspiration status (p204)

- Colodny (2000) showed no relationship between aspiration on a FEES exam and SpO2 levels

- Aspirators tend to have lower levels in general, indicating patients with dysphagia may have compromised respiratory systems
Labs and Dysphagia

- **Respiratory Rates**
- Leder (2000), HR increased for aspirators and non-dysphagia patients = should not be used as a marker of distress either
- Drop in O2 during swallowing evaluation could be due to physical exertion, feeding themselves, positioning, underlying disease process

- RR higher than 25 breaths/minute have been found to be associated with aspiration in patients with COPD (Cvejic et al., 2011).
Labs and Dysphagia

- **Respiratory Rate**

  Steele & Cichero (2014) it is worthwhile to measure resting RR during swallowing evaluation (p. 301)

  - “I think of the ICU patient puffing away at 30-40 breaths per minute and requiring a face mask. I say to myself…if I can’t even get to the mouth and if there is no break between breaths, than we should not be feeding the patient.”
<table>
<thead>
<tr>
<th>Medication category</th>
<th>Side effects affecting swallow</th>
<th>Medication names (Generic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alzheimer's/Dementia</td>
<td>Nausea, anorexia, vomiting</td>
<td>Aricept (donepezil); Exelon (rivastigmine)</td>
</tr>
<tr>
<td>Angiotensin converting enzyme (ACE) inhibitors</td>
<td>Cough, chronic throat clearing, nausea/vomiting; abdominal pain</td>
<td>Vasotec (enalapril); Zestril (Lisinopril); Lotensin (benazepril)</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>Oral myositis; yeast infection</td>
<td>Amoxil; Augmentin (Penicillin); tetracycline</td>
</tr>
<tr>
<td>Anticholinergic; dyspnea</td>
<td>Dyspnea, cough, nausea, xerostomia, throat irritation, dyspepsia</td>
<td>Atrovent HFA (ipratropium bromide inhaled); Proventil HFA (albuterol inhaled); Advair HFA (fluticasone/salmeterol inhaled)</td>
</tr>
<tr>
<td>Antidepressants (benzodiazepines)</td>
<td>Appetite change, dysarthria, ataxia, xerostomia</td>
<td>Xanax (alprazolam); Ativan (lorazepam)</td>
</tr>
<tr>
<td>Antihistamines (second generation)</td>
<td>Abdominal pain, dry mucous membranes; xerostomia, diarrhea, pharyngitis</td>
<td>Alavert (loratadine); Allegra (fexofenadine); Claritin (loratadine); Zyrtec (cetirizine)</td>
</tr>
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</tr>
<tr>
<td>Antiparkinsonian</td>
<td>Dyskinesia, nausea, vomiting, xerostomia</td>
<td>Sinemet (carbidopa/levodopa)</td>
</tr>
<tr>
<td>Antipsychotics (second generation)</td>
<td>Xerostomia, dyskinesia, cough, dysphagia</td>
<td>Abilify; Risperdal; Seroquel, Haldol, Zyprexa, Olanzapine</td>
</tr>
<tr>
<td>Antispasmodics</td>
<td>Xerostomia</td>
<td>Levbid/Levsin (hyoscyamine)</td>
</tr>
<tr>
<td>Antiulcer-proton pump inhibitors (PPI)</td>
<td>Nausea, abdominal pain, vomiting, diarrhea</td>
<td>Nexium (esomeprazole); Aciphex (rabeprazole); Prevacid (lansoprazole)</td>
</tr>
<tr>
<td>Diuretics</td>
<td>Nausea, vomiting, anorexia, abdominal cramps, diarrhea</td>
<td>Lasix (furosemide)</td>
</tr>
<tr>
<td>Antiemetic</td>
<td>Xerostomia</td>
<td>Transderm-scop (scopolamine)</td>
</tr>
</tbody>
</table>
Surgical Interventions

- Mobilization of vocal cord
- Placement of G-tube or J-tube
Supplemental Tests

- Document current dietary level
- Nutritional status
- Suspicion for GERD or LPR

Current dietary level test
- Functional Oral Intake Scale (FOIS)
- Mini Nutritional Assessment (MNA)
- Reflux Disease Questionnaire (RDQ)-food sticking
- Gastrointestinal Symptoms Rating Scale (GSRS)
- Reflux Questionnaire (ReQuest)
- Reflux Symptom Index (RSI) – Easiest LPR screen

- The dysphagia Handicap Index (Silbergleit et al., 2012)

Complaints of Globus sensation, hoarseness, chronic cough, dysphagia, odynophagia, chronic throat clearing should be screened for LPR.
Quality of life scales

Swallow Quality of Life-SWAL-QOL (McHorney et al., 2002)

SWAL-CARE (McHorney et al., 2002)

For head and Neck

MD Anderson Dysphagia Inventory (Chen, 2001)
# Dysphagia Management Team

- Speech Language Pathologist
- Otolaryngologist
- Gastroenterologist
- Radiologist
- Neurologist
- Dentist
- Nurse
- Dietician
- OT
- PAT
- Pulmonologist
- Neurodevelopmental specialist (Pediatrics)