Pediatric Reflux

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Pediatric Reflux

- Functional Gastroesophageal Reflux
- GERD
- Secondary Gastroesophageal Reflux
Lower Esophageal Sphincter

- Pinch-Cock Action
- Intraabdominal Esophagus
- Angle of His
- Mucosal Rosette
- High Pressure Zone
- Abdominal Pressure
Reflux events in infants

- Maturation of LES at 5-7 weeks of life, regardless of gestational age
- Esophagitis and TLESRs – a vicious Cycle
- Acid & Pepsin, Bile Acids and Trypsin
Typical presentation of GERD

- Crying/Irritability
- Poor feeding
- Regurgitation
- Epigastric pain
- FTT/weight loss
- Sore throat
- Waterbrash
- Hematemesis
- Anemia
Atypical presentation of GERD

- Apnea/Bradycardia
- ALTEs
- Wheezing/Asthma
- Stridor
- Recurrent pneumonia
- Chronic cough
- Sandifer’s syndrome
- Hoarseness/
  Laryngitis
- Otalgia
- Sinusitis
GERD Untreated

- Resolves by 2 years of age in 60% of GERD
- Persists until age 4 in 30%
- ½ stricture, ½ malnutrition
GERD in Otolaryngology

- Chronic Sinusitis – avoid FESS
- Chronic Cough
- Globus Pharyngeus- osteophytes, FB, cricopharyngeus, tonsils, goiter, web, cervical lad, mass
- Dysphagia
GERD in Otolaryngology

- Otitis Media?
GERD in Otolaryngology

- Vocal cord granuloma
- Laryngomalacia
- Pseudolaryngomalacia
- Subglottic stenosis
- Sandifer’s Synd.
Apnea & ALTEs

- 7-15% SIDS
- At least 53% of ALTEs
- Esophagolaryngeal Adductor Reflex – obstructive apnea
- Laryngeal Chemoreflex – Central Apnea
- Seizure and Reflux?
Asthma

- Vicious Cycle
- Macroaspiration
- Microaspiration
- Esophagitis – vagal reflex
- <3 yo do better
- Fundoplication improves 88%
Differential diagnosis

- Food allergy (cow milk)
- Infection
- Increased intracranial pressure (tumor)
- Hydronephrosis
- Intestinal obstruction
- Metabolic Disorders (uremia)
Diagnosing GERD
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- Upper GI
- Esophageal biopsy
- DL and Bronch
- pH probe
- Scintigraphy
- Modified Bernstein Test
- Manometry
Treatment of GERD

Suspect GERD

GI anomaly
- Barium esophagogram, Video swallow
  - Normal Study
  - Esophageal pH Probe
- Surgical Evaluation

GERD

Life-Threatening Symptoms
- Anti-reflux Surgery
  - Conservative +/- Medical Therapy
    - Failed Medical tx
    - Incompetent Larynx
      - Surgical Evaluation

Mild, Moderate Symptoms
- Esophagoscopy, biopsy
  - DL&B BAL
  - Aspiration, No GERD
    - Aspiration, No GERD
    - Normal Larynx
      - Surgical Evaluation
Treatment of GERD

- Appropriate feeds
- Caffeine, chocolate, and tobacco
- Positioning
- Thickening feeds
- Small, frequent feeds
- Continuous feeding via NGT
Medical Treatment of GERD

- Prokinetics
  - Cisapride – Prolonged QT interval, Torsades, and heart block
    Risk of death 1/250,000
    Avoid macrolides, azoles, & grapefruit juice; cytochrome P450
  - Metoclopramide – EPS in 24-48 hr
Medical Treatment of GERD

- Acid Suppressants
  - Antacids – Al toxicity & osteomalacia
  - H-2 Blockers – Usually sufficient
  - Proton Pump Inhibitors – Omeprazole; deliver in acid medium
Surgical Treatment of GERD
Surgical Treatment of GERD

- Nissen – 2/3
  - 360 degree wrap
  - Gas bloat
- Thal – 1/3
  - 180 degree wrap
  - Long intraabdominal, fixation, restores angle of His
Surgical Treatment of GERD

- Indications
  - Failure of medical tx
  - Stricture
  - Pulmonary Dz
  - Quality of Life
  - Esophageal atresia
Surgical Treatment of GERD

- Indications in children < 2 yo
  - Neurologic impairment
  - BPD/RDS
  - Apneic Episodes
  - Congenital anomalies (hiatal hernia, esophageal atresia)
Surgical Treatment of GERD

- Outcomes
  - More effective in children
  - Good outcomes: 94% NN, 85% NI
  - Complications: 4.2% NN, 12.8% NI
  - Reoperation: 3.6% NN, 11.8% NI
  - Mortality: 0.07%

- TLESRs and Fundoplication
Conclusion

- Similar incidence of GERD in infants and adults
- Patients < 2 yo: A question of motility
- Reflux and Otolaryngology