MOTILITY DISORDERS OF THE ESOPHAGUS

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Esophageal Anatomy

UES
Striated Muscle
Transition Zone
Smooth Muscle

LES
1F. Transformation to 2D representation of color contour

- UES
- LES
- Striated Muscle
- Transition Zone
- Smooth Muscle
- 3 sec
- mmHg

*mmHg:

- 140
- 120
- 100
- 80
- 60
- 40
- 20
- 0
Normal Swallow

IRP = Integrated Relaxation Pressure

DL = Distal Latency
Interval between UES relaxation and CDP
If DL<4.5 s = premature

CFV = Contractile Force Velocity
Speed of Smooth Muscle Contraction

CDP = Contractile Deceleration Point
Point at which velocity slows down
Within 3 cm of proximal border of LES

DCI = Distal Contractile Integral
Amplitude x Length x Time (mmHg/cm-s)
DCI<100 = Failed
DCI 100-450 = Weak
DCI 450-800 = Normal
DCI >8000 = Hypercontractile
High resolution manometry in clinical practice: utilizing pressure topography to classify esophageal motility abnormalities.
- Impedance of air is very high
- Impedance of the organ wall is 10 to 30 times higher than the impedance of the transported contents.
- Low impedance of the bolus makes it easily distinguishable from its surroundings.

**High Conductance = Low Impedance**
Patient Case

- 72 year old male presents with a 3 year history of dysphagia
  - Dysphagia to liquids 2-3 times a week, No dysphagia to solids
  - PMH: HTN, HLD, Laryngopharyngeal Reflux,
  - No significant PSH

- OSH EGD report on 9/18/16: Poor to absent peristalsis, possible achalasia “Birds Beak”

- Biopsy of antrum revealed chronic gastritis, positive for H. Pylori
Patient Case

Esophageal Manometry

Jackhammer Esophagus
Case

- 50 y.o Female
- 4 years of progressive dysphagia for solids and eventually liquids and recently
- PMH: Hypertension – ACE Inhibitors
  - NIDDM- Diet controlled
  - GERD – H2 Blockers (PRN)

PSH: None
Absent Peristalsis

100% Swallows Failed
DCI < 100 mmHg-cm-s

Normal IRP
(IRP < 15 mmHg)
- 45 y.o Male
- 6 months of progressive dysphagia for solids

- PMH: Hypertension – ACE Inhibitors
  NIDDM- Diet controlled
  GERD – H2 Blockers (PRN)

- PSH: None
EGJ Outflow Obstruction

Normal Peristaltic Activity
DL > 4.5 s
DCI > 450 mmHg-cm-s

Elevated IRP
(IRP > 15 mmHg)
Hiatal Hernia
35 y.o Male

15 years of intermittent dysphagia for solids and liquids (learned to “live with it”) with recent exacerbation of symptoms and weight loss halitosis (girlfriend left him)

PMH: None

PSH: None
Type I Achalasia

100% Failed Peristalsis
(DCI<100 mmHg-cm-s)

Elevated IRP
(IRP>15 mmHg)
Type II Achalasia

100% Failed Peristalsis
(>20% swallows with Pan esophageal Pressurization)

Elevated IRP
(IRP>15 mmHg)
Type III Achalasia (Spastic)

- Elevated IRP (IRP > 15 mmHg)
- >20% swallows with Premature (Spastic) Contractions (DL < 4.5s) and DCI > 450 mmHg-cm-s

Impaired EGJ relaxation (IRP = 25.7 mmHg)
Hiccups

Chicago Classification Overview

- Achalasia
  - Type I
  - Type II
  - Type III
- EGJ Outflow Obstruction
- Absent Peristalsis
- Distal Esophageal Spasm
- Hypercontractile Esophagus (Jackhammer)