Pneumatic balloon dilatation for achalasia

Prof. Dr. med. Radu Tutuian
Chefarzt Gastroenterologie – Spital Tiefenau
Inselgruppe AG
radu.tutuian@insel.ch
Achalasia – Symptoms

• Dysphagia (difficulty swallowing) 97-100%
  – Solid and liquid foods

• Weight loss 30-91%
  – Slow, over month to years

• Regurgitation 59-64%
  – Recumbent, mainly at night, undigested food

• Chest pain 17-95%

• Nocturnal coughing 11-46%

Eckardt et al. World J Gastroenterol 2009; 15:3969-75
Barium esophagogram

Dilated esophagus

Fluid retention

Bird’s beak
Esophageal manometry

20 cm
15 cm
10 cm
5 cm
LES (HPZ)
Esophageal aperistalsis
Achalasia – manometric criteria

- Aperistalsis
- Poorly relaxing LES
- Hypertensive LES
- All 3 criteria

Agrawal et al. J Clin Gastroenterol 2008; 43:266-70
High resolution manometry (HRM)

Universitätsklinik für Viszerale Chirurgie und Medizin (UVCM)

Tutuian: Balloon dilatation for achalasia
HRM - Achalasia

Tutuian: Balloon dilatation for achalasia
Chicago Classification v3.0

1. IRP ≥ ULN and 100% failed peristalsis or spasm
   - Yes: Achalasia
     - Type I: No contractility
     - Type II: ≥20% PEP
     - Type III: ≥20% spasm (DL<4.5s)
   - No: Disorders with EGJ outflow obstruction
     - Incompletely expressed achalasia
     - Mechanical obstruction

2. IRP ≥ ULN and not Type I-III achalasia
   - Yes: EGJ outflow obstruction
     - Incompletely expressed achalasia
     - Mechanical obstruction
   - No: Major disorders of peristalsis
     - Entities not seen in normal subjects

3. IRP normal and Short DL or high DCI or 100% failed peristalsis
   - Yes: DES
     - ≥ 20% premature (DL<4.5s)
     - Jackhammer esophagus
     - ≥ 20% DCI >8,000 mmHg•s•cm
     - Absent contractility
     - No scorable contraction
     - Consider achalasia
   - No: Ineffective motility (IEM)

4. IRP normal and ≥50% ineffective swallows
   - Yes: Fragmented peristalsis
     - ≥50% fragmented swallows and not ineffective
   - No: Minor disorders of peristalsis
     - Impaired clearance

5. IRP normal and > 50% effective swallows
   - Yes: Normal

Achalasia: HRM subtypes

Type I (classic)

Type II (with compression)

Type III (achalasia with spasm)

Pandolfino et al. Gastroenterology 2008; 135: 1526-33
Achalasia with normal IRP4s

Ponds et al Neurogastroenterol Motil 2016; [E-pub]
Achalasia EJG distensibility (Endo-FLIP®)

Ponds et al Neurogastroenterol Motil 2016; [E-pub]
Achalasia EJG distensibility (Endo-FLIP®)

EJG-distensibility

EJG-distensibility before and after Rx)

Ponds et al Neurogastroenterol Motil 2016; [E-pub]
Therapeutic options

• Medical therapy
  – Nitrates, Ca-Blockers

• Endoscopic therapies
  – BoTox
  – Pneumatic Dilatation
  – POEM

• Surgical interventions
  – Myotomy (open vs. laparoscopic)
    ± Fundoplication (Dor vs. „floppy Nissen“)
Achalasias – Pneumatic dilatation

Balloon: 30 – 35 – 40mm
Pressure: 5 – 10 – 20 PSI
Duration: 15 sec – 5 min
Pneumatic dilatation: how do I do it...

- Gastroscopy
  - r/o pseudoachalasia
  - empty esophagus
  - guide wire

- **Pneumatic Dilatation**
  - 30mm Rigiflex II Balloon
  - 10 PSI, 15 seconds

- Gastroscopy + Oesophagogram
  - r/o perforation
Pneum. Dilatation vs. Lap. Heller Myotomy

• **Study design:**
  - multicenter, prospective randomized controlled

• **Study participants:**
  - Newly diagnosed achalasia (2003-2008)
  - 95 PD (30 mm, 35mm) vs. 106 LHM + Dor
  - Follow-up: 1, 3, 6, 12 month afterwards yearly

• **Endpoints**
  - Symptoms (Eckardt score)
  - Timed barium swallow: 1, 2, 5 min
  - LES resting pressure

*Boeckxstaens et al. NEJM 2011; 364: 1807-16*
Pneum. Dilatation vs. Lap. Heller Myotomy

Per-protocol (PP)

Intention to treat (ITT)

Boeckxstaens et al. NEJM 2011; 364: 1807-16
Achalasia: response to therapy
(91 LHM vs 85 PD)

Rohof et al. Gastroenterology 2013;144:718–725
Treatment outcome PD vs. LHM

(success: Eckardt ≤3)

Rohof et al. Gastroenterology 2013;144:718–725
Pneum. Dilatation vs. Lap. Heller Myotomy

Clinical response

Radiological response

Boeckxstaens et al. NEJM 2011 364:1807-16
5-year outcome data PD vs. LHM

Full analysis (ITT)  

Per protocol (PP)  

5-year outcome data PD vs. LHM
(25% needed re-dilatation)

Single vs. repeated dilatations
(N=150; 1992-2004)

Achalasia: Follow-up

• Clinical evaluation - **Eckardt score (every 6-12 mo)**
  - Dysphagia (0 - never, 1 – rare, 2 – daily, 3 – each meal)
  - Chest pain (0 - never, 1 – rare, 2 – daily, 3 – each meal)
  - Regurgitation (0 - never, 1 – rare, 2 – daily, 3 – each meal)
  - Weight loss

• **Timed barium swallow (every 1-2 years)**
„Timed barium swallow“

Summary

• Diagnosis
  – Clinical, radiographically and manometric criteria
    • EGJ-distensibility - EndoFLIP
  – Endoscopy to r/o pseudoachalasia / Candida esophagitis

• Therapy – pneumatic dilatation
  – Easy to perform; outpatient procedure
  – Risk of perforation 2-3%
  – Long-term results comparable to laparoscopic Heller’s myotomy
    • Might require repeated dilatations (q 2-5 years)

• Follow-up
  – Yearly clinically; timed barium swallow q3 years