Intussusception in Children and Adults

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The Essentials of Intussusception

- A loop of bowel infolds into the lumen immediately distal to it

  ![Intussusception Diagram]

- May be precipitated by a lead point

- Common cause of acute abdomen in children 3 months to 3 years old (2nd only to appendicitis).

- Classic triad: abdominal pain, palpable mass and currant jelly stool
Pediatric Patient #1

- 18 month old girl with a one day history of intermittent abdominal pain and bloody stools.
Plain Film
Pediatric Patient #1

- Absent liver edge
- Paucity of air
- Dilated loops
- Open epiphysis

Courtesy of Dr. Geary, BIDMC
Classic signs on plain film

- Bowel obstruction
  - No RLQ air or stool in colon
- Absent liver edge
- Target sign/soft tissue mass
- Crescent sign
- “Lateralization” of ileum

http://www.hawaii.edu/medicine/pediatrics/pemxray/v7c18.htm
Ultrasound
Pediatric Patient #1

Longitudinal U/S

Transverse U/S

Pseudokidney sign:
Sandwich like thin lines with varying echogenicity

Intussusceptum: internal ring

Intussuscipiens: external ring

Hyperechoic mesenteric fat:

Doughnut sign:
Concentric rings

Courtesy of Dr. Geary, BIDMC

Courtesy of Dr. Geary, BIDMC
Pediatric Treatment by Reduction

Pediatric Patient #1

- Only 3-10% have lead points allowing non-surgical reduction
- Reduction successful in 80-90% of cases
- Factors decreasing the likelihood of success
  - Symptoms >24h
  - Rectal bleeding
  - SBO
  - No blood flow
Examination of bowel viability
Pediatric Patient #1

Doppler U/S

Areas of flow suggest that bowel can be reduced by air/barium enema without increase risk of rupture

Courtesy of Dr. Geary, BIDMC
Method of Reduction

- Typically air enema with a maximum air pressure of 120mmHg
- Complication is perforation
- Contraindications: pneumoperitoneum, peritonitis
- Intussusceptions may recur, necessitating repetition of reduction
Air enema under fluoroscopy

Pediatric Patient #1

Dilated loop

Less dilatation

Fluoroscopic View 1

Fluoroscopic View 2

Flow defect

Defect size decreasing

Courtesy of Dr. Geary, BIDMC
Air enema continued
Pediatric Patient #1

Fluoroscopic view 3
Resolved flow defect

Fluoroscopic view 4
Regular peristalsis has returned

Courtesy of Dr. Geary, BIDMC

Resolved flow defect

Regular peristalsis has returned
Adult Patient #1

- 39 year old man with a four day history of abdominal pain and progressively decreasing stools
- On exam, abdomen is distended and diffusely tender
- Wbc 12,500
Intussusception in Adults

- Presents in ~1% of adult patients with bowel obstruction
- Not part of the differential diagnosis for adults with abdominal pain; generally found on CT workup
- 80-90% are secondary to underlying pathology
Diagnosis by CT
Adult Patient #1

Cross-section 1

- Pathognomonic RUQ target mass (blue circle)
- Small bowel does not appear obstructed—loops not dilated (yellow arrows)
- Question of pneumotosis vs. intralumenal air (green arrow)

Cross-section 2

PACS, BIDMC
Plain film proxy (for comparison with pediatric case)

Adult Patient #1

CT Scout film

Paucity of gas in RUQ consistent with the RUQ mass

Otherwise, gas is throughout suggesting he is not currently obstructed
Sagittal Reconstruction
Adult Patient #1

Target-like mass
Coronal Reconstruction

Adult Patient #1

Target appearance on both axial and sagittal cuts explained by oblique orientation

Sausage-shaped mass
Adult Treatment by Surgery

- **MUST consider likely pathologic lead point in patients >12 years**
  - Appendiceal mass
  - Lymphoma / other malignancy
  - Meckel’s diverticulm
  - Duplication cysts
  - Polyps
  - Hemmorhage (HSP)

- **Because of the high likelihood of pathology, the treatment of intussusception in adults is surgery.**
Operative Findings

Adult Patient #1

- Ileocolic intussusception with obstruction, but no necrosis
- Mass consistent with appendiceal mucocele
- Decompression of intussusception followed by right hemicolecctomy
Summary

- Intussusception in children is common and generally idiopathic. It is diagnosed by plain film and ultrasound, and it is reduced by air enema.

- Intussusception in adults usually has a causative pathologic lead point. It is rare, diagnosed by CT, and treated by surgery.
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References