ABDOMINAL PAIN IN PEDIATRIC PATIENT

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In General

- Common problems occur commonly
  - intussusception in the infant
  - appendicitis in the child
- The differential diagnosis is age-specific
- In pediatrics most belly pain is non-surgical
  - "Most things get better by themselves. Most things, in fact, are better by morning."
- Bilous emesis in the infant is malrotation until proven otherwise
- A high rate of negative tests is OK

The History

- Pain (location, pattern, severity, timing)
  - pain as the first sx suggests a surgical problem
- Vomiting (bile, blood, projectile, timing)
- Bowel habits (diarrhea, constipation, blood, flatus)
- Genitourinary complaints
- Menstrual history
- Travel, diet, contact history

Diagnosis by Location

biliary
hepatitis

gastroenteritis
early appendicitis
PUD
pancreatitis

spleen/EBV

appendicitis
enteritis/IBD
ovarian

non-specific
colic
early appendicitis

constipation
UTI
pelvic appendicitis

constipation
non-specific
ovary

The Physical Examination

- Warm hands and exam room
- Try to distract the child (talk about pets)
- A quiet, unhurried, thorough exam
- Plan to do serial exams
- Do a rectal exam

The Abdominal Examination

breath sounds
Murphy's sign
"sausage"

breath sounds
spleen edge

Dance's sign
rebound
tender at McBurney's point
cecal "squish"

constipation
Rovsing's sign

hernias
torsion

Relevant Physical Findings

- Tachycardia
- Alert and active/still and silent
- Abdominal rigidity/softness
- Bowel sounds
- Peritoneal signs (tap, jump)
- Signs of other infection (otitis, pharyngitis, pneumonia)
- Check for hernias

Blood in the Stool

- Newborn
  - **ingested maternal blood**, formula intolerance, NEC, volvulus, Hirschsprung's
- Toddler
  - **anal fissures**, infectious colitis, Meckel's, milk allergy, juvenile polyps, HUS, IBD
- 2 to 6 years
  - **infectious colitis**, juvenile polyps, anal fissures, intussusception, Meckel's, IBD, HSP
- 6 years and older
  - **IBD**, colitis, polyps, hemorrhoids

Blood in the Vomitus

- Newborn
  - **ingested maternal blood**, drug induced, gastritis
- Toddler
  - **ulcers, gastritis, esophagitis**, HPS
- 2 to 6 years
  - **ulcers, gastritis, esophagitis**, varices, FB
- 6 years and older
  - ulcers, gastritis, esophagitis, varices

Further Work-up

- CBC and differential
- Urinalysis
- X-rays (KUB, CXR)
- US
- Abdominal CT
- Stool cultures
- Liver, pancreatic function tests
- (Rehydrate, ?antibiotics, ?analgesiscs)

Relevant X-ray Findings

- Signs of obstruction
  - air/fluid levels
  - dilated loops
  - air in the rectum?
- Fecolith
- Paucity of air in the right side
- Constipation

Operate NOW

- Vascular compromise
  - malrotation and volvulus
  - incarcerated hernia
  - nonreduced intussusception
  - ischemic bowel obstruction
  - torsed gonads
- Perforated viscus
- Uncontrolled intra-abdominal bleeding

Operate SOON

- Intestinal obstruction
- Non-perforated appendicitis
- Refractory IBD
- Tumors

Appendicitis

- Common in children; rare in infants
- Symptoms tend to get worse
- Perforation rarely occurs in the first 24 hours
- The physical exam is the mainstay of diagnosis
- Classify as simple (acute, supparative) or complex (gangrenous, perforated)

Incidental Appendectomy

- Can be done by inversion technique
- Absolute indication
  - Ladd's procedure
- Relative indications
  - Hirschsprung's pullthrough
  - Ovarian cystectomy
  - Intussusception
  - Atresia repair
  - Wilms' tumor excision
  - CDH

Intussusception

- Typically in the 8-24 month age group
- Diagnosis is historical
  - intermittent severe colic episodes
  - unexplained lethargy in a previously healthy infant
- Contrast enema is diagnostic and often therapeutic
- Post-op small bowel intussusception

The “Medical Bellyache”

- Pneumonia
- Mesenteric adenitis
- Henoch-Schonlein Purpura
- Gastroenteritis/colitis
- Hepatitis
- Swallowed FB
- Porphyria
- Functional ileus
- UTI
- Constipation
- IBD “flare”
- rectus hematoma

Laparoscopy

- Diagnosis
  - non-specific abdominal pain
  - chronic abdominal pain
  - female patients
  - undescended testes
  - trauma
- Treatment
  - appendicitis
  - Meckel’s diverticulum
  - cholecystitis
  - ovarian detorsion/excision
  - lysis of adhesions

The Neurologically Impaired Patient

- The physical exam is important for non-verbal patients
- The history is important for the spinal cord dysfunction patient
- Close observation and complementary imaging studies are necessary

The Immunologically Impaired Patient

- A high index of suspicion for surgical conditions and signs of peritonitis may necessitate operation
  - perforation
  - uncontrolled bleeding
  - clinical deterioration
- Blood product replacement is essential
- Typhlitis should be considered; diagnosis is best established by CT

The Teenage Female

- Menstrual history
  - regularity, last period, character, dysmenorrhea
- Pelvic/bimanual exam with cultures
- Pregnancy test/urinalysis
- US
- Laparoscopy
- Differential diagnosis
  - mittelschmerz, PID, ovarian cyst/torsion, endometriosis, ectopic pregnancy, UTI, pyelonephritis

Thank you very much