DIFFERENTIAL DIAGNOSIS FOR ACUTE ABDOMINAL PAIN IN PEDIATRICS

Considering a differential diagnosis by age group is a logical approach as the differential for acute abdominal pain is vast.

Before you even step into the room to meet the patient, you can have an idea of potential diagnoses based on age.

INFANTS & TODDLERS (0-4 years)
- Colic
- Cow’s milk protein allergy
- Hirschsprung disease
- Incarcerated hernia
- Intussusception
- Lead poisoning
- Malrotation of the midgut
- Meckel diverticulum
- Necrotizing enterocolitis

SCHOOL AGE (5-11 years)
- Abdominal migraine
- Diabetic ketoacidosis
- Functional pain
- Henoch-Schonlein purpura
- Lactose intolerance
- Lead poisoning
- Mononucleosis
- Perforated ulcer

ADOLESCENCE (12-18 years)
- Diabetic ketoacidosis
- Dysmenorrhea
- Early pregnancy loss
- Ectopic pregnancy
- Functional pain
- Henoch-Schonlein purpura
- Hepatitis
- Inflammatory bowel disease
- Irritable bowel syndrome
- Lactose intolerance
- Mononucleosis
- Pelvic inflammatory disease
- Perforated ulcer
- Ruptured ovarian cyst
- Sexually transmitted infections
- Urolithiasis

ALL AGES (0-18 years)
- Adhesions
- Appendicitis
- Bowel obstruction
- Child abuse
- Constipation
- Dietary allergies
- Gallbladder disease
- Gastroenteritis
- Hemolytic uremic syndrome
- Mesenteric adenitis
- Myocarditis/pericarditis
- Ovarian torsion
- Pancreatitis
- Sickle cell crisis
- Testicular torsion
- Trauma
- Tumour
- Urinary tract infection
- Viral infection
- Volvulus

Clinical pearl: if pain precedes vomiting, it is likely a surgical cause; however, if the pain follows vomiting, it is more likely to be a medical cause.
Acute abdominal pain evaluation and diagnostic algorithm for acute abdominal pain:

**ACUTE SURGICAL ABDOMEN:**
- **Hx:** bilious vomiting, bloody diarrhea, abdominal trauma, bile-stained or feculent vomitus
- **P/E:** fever, absent bowel sounds, rebound tenderness, rigidity, Rovsing’s, McBurney’s, voluntary guarding, or acute blood loss

**CONSTIPATION?**
- If history is in doubt & exam is difficult.
- Abdominal x-ray
- Constipation, bowel obstruction

**DIARRHEA?**
- Viral gastroenteritis
- Consider: dysentery, infectious enteritis, colitis, inflammatory bowel disease

**BLOODY?**
- Urinalysis
- Urinary tract infection

**URINARY SYMPTOMS?**
- β-hCG, gonorrhea & chlamydia testing, pelvic or trans-vaginal U/S
- STI, ectopic pregnancy, pregnancy loss

**PREGNANCY or STI RISK?**
- Consider: appendicitis, bowel obstruction, bowel perforation, incarcerated hernia, intussusception, malrotation, ovarian/testicular torsion, volvulus

**RESPIRATORY SYMPTOMS?**
- Chest x-ray; rapid strep test
- Consider: pneumonia, streptococcal pharyngitis, URTI

**APENDICITIS**
- Acute appendicitis is the most common pediatric surgical emergency.

**PEDIATRIC APPENDICITIS SCORE (PAS)**

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>DESCRIPTION</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLQ tenderness to percussion, hopping, or cough</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td>Migration of pain to RLQ</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Fever ≥ 38°C (100.4°F)</td>
<td>No</td>
<td>0</td>
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<tr>
<td></td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Anorexia</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Nausea or vomiting</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Tenderness over right iliac fossa</td>
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<td>0</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td>Leukocytosis</td>
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<td>0</td>
</tr>
<tr>
<td>WBC &gt;10,000</td>
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<td>1</td>
</tr>
<tr>
<td>Neutrophilia</td>
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<td>0</td>
</tr>
<tr>
<td>ANC &gt; 7,500</td>
<td>Yes</td>
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</tr>
</tbody>
</table>

**MANAGEMENT BASED ON PAS SCORE**

- **LOW RISK (<4)**: Conrad S, neodymium polychromatic x-ray
- **EQUIVOCAL (4-6)**: Imaging (U/S or MRI), Surgical consult may be warranted
- **HIGH RISK (>6)**: Surgical consult is warranted

**CONSTITUTION**
- The most frequently identified cause of acute abdominal pain is constipation.

**HISTORY**
- Long history of difficult or painful defecation
- Infrequent bowel movements
- Withholding behavior
- Poorly localized pain, usually non-radiating

**PHYSICAL EXAM**
- Mild tenderness to palpation
- Palpable fecal masses
- DRE may reveal hard stool in the rectal vault

**INVESTIGATIONS**
- Labs are usually unnecessary
- Consider abdominal x-rays if the history is in doubt and the physical exam is difficult.

**MANAGEMENT**
- Lactulose or polyethylene glycol 3350 PO or via NG tube
- Enemas are not recommended
- Maintenance regimen: daily stool softeners, daily timed toilet sitting, and improved diet

Functional constipation: (most common) does not have an anatomical or physiological cause, yet the child experiences distressing infrequent passage of uncomfortable and hard stools.

**IMPORTANT POINTS**
- Look for any red flags that would require further investigation and/or consultation.
- Remember that this may be an acute presentation of a chronic problem (e.g.: child presenting to the ED with abdominal pain from chronic constipation).
- If the child is being discharged with an uncertain diagnosis, it is crucial to inform families to return to hospital should symptoms progress or the child becomes sicker.