

Evidence-Based Medicine Approach to Abdominal Pain



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KEYWORDS

- Evidence-based medicine • Abdominal pain • Approach to abdominal pain
- Abdomen • EBM approach

KEY POINTS

- A systematic approach to evaluating abdominal pain can provide patients with efficient and accurate care.
- A thorough history to localize the abdominal pain and associated symptoms can help to create a differential diagnosis.
- The cough test, inspiration test, and peritonitis test can help to determine if a patient has a concerning abdominal examination.
- Bedside ultrasound and upright plain radiograph are of utility in an unstable patient to determine the cause of the abdominal pain.
- Pain medication should not be withheld in a patient presenting with abdominal pain.

INTRODUCTION

The chief complaint of abdominal pain accounts for 5% to 10% of all presentations in the emergency department (ED).¹ With such broad differential and diagnostic modalities available, a systematic approach to evaluating abdominal pain is essential to provide patients with efficient and accurate care. Using evidence-based principles, the approach to abdominal pain can be simplified.

HISTORY OF PRESENTING ILLNESS

The history of presenting illness is arguably the single most important part in the evaluation of a patient with abdominal pain. History and physical examination alone were able to determine between organic and nonorganic causes of abdominal pain in 79%

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of patients.² Another study demonstrated that a careful history alone can lead to the correct diagnosis in up to 76% of cases.³ Several key characteristics of a patient's history can help guide the differential diagnosis.

Onset

The timing of patients' pain can help determine acuity, progression of symptoms, and likelihood of emergent cause. Acute severe pain is more likely to be associated with serious, emergent cause, such as ruptured abdominal aortic aneurysm (AAA), mesenteric ischemia, and bowel perforation.⁴ A large retrospective and prospective study demonstrated this when most of the patients with a perforated peptic ulcer presented within 12 hours of symptom onset.⁵ More insidious pain correlates with a developing inflammatory or infectious pathologic conditions, such as cholecystitis, appendicitis, or small bowel obstruction (SBO).⁶ An example was found in one study demonstrated most patients with appendicitis presenting at 12 to 23 hours of symptoms onset and most patients with diverticulitis presenting after 48 hours.⁵

Location

Location of pain is a key part in determining the affected organs. Understanding the embryologic derivation of the gastrointestinal organs can help the examiner narrow down a differential. Localized pain in the epigastrium is highly specific for diseases of the foregut structures, including the stomach, pancreas, liver, and proximal duodenum.⁷ Periumbilical pain is 99% specific for diseases of the midgut region or intestine,⁷ including the remaining small bowel, proximal third of the colon, and the appendix. Finally, localized suprapubic pain is associated with the hindgut organs or the remaining two-thirds of the colon, the bladder, and the genitourinary organs.⁶ **Table 1** demonstrates potential differential diagnosis based on the information obtained from the history of presenting illness.⁸

Table 1 Differential diagnosis based on location of abdominal pain	
Location	Differential Diagnosis
RUQ	<i>Biliary:</i> cholecystitis, cholelithiasis, cholangitis <i>Hepatic:</i> hepatitis, hepatic abscess <i>Others:</i> pneumonia, pulmonary embolism, pancreatitis, peptic ulcer disease, retrocecal appendicitis
LUQ	<i>Splenic:</i> splenic infarct, splenic laceration <i>Cardiac:</i> myocardial infarction, pericarditis <i>Others:</i> pneumonia, pulmonary embolism, pancreatitis, peptic ulcer disease, diaphragmatic hernia
Epigastric	<i>Gastric:</i> peptic ulcer disease, gastritis <i>Pancreatic:</i> pancreatitis <i>Biliary:</i> cholecystitis, cholelithiasis, cholangitis
RLQ	<i>Colonic:</i> appendicitis, cecal diverticulitis, cecal volvulus <i>Genitourinary:</i> nephrolithiasis, ovarian torsion, PID, ectopic pregnancy, testicular torsion, inguinal hernia <i>Others:</i> mesenteric adenitis
LLQ	<i>Colonic:</i> sigmoid diverticulitis <i>Genitourinary:</i> nephrolithiasis, ovarian torsion, PID, ectopic pregnancy, testicular torsion, inguinal hernia <i>Others:</i> abdominal aortic aneurysm

Abbreviations: LLQ, left lower quadrant; LUQ, left upper quadrant; PID, pelvic inflammatory disease; RLQ, right lower quadrant; RUQ, right upper quadrant.

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