



Alaa Abd-Elseyed

Introduction

Abdominal pain can be challenging to diagnose and treat. There are several organs and nervous system structures in the abdominal area which makes it hard to identify the source of pain (which often is of a diffuse nature). Sometime no cause will be found after patients undergo extensive work-up. It is essential to understand abdominal anatomy and the potential causes of pain to be able to formulate a differential diagnosis and plan without ordering unnecessary tests [1].

- Pancreas. e.g. pancreatitis.
- Vessels. e.g. aortic dissection, mesenteric ischemia.

Left Upper Quadrant Pain

- Heart.
- Stomach.
- Pancreas.
- Kidney.
- Vessels.

Right Upper Quadrant Pain

- Biliary system. e.g. cholecystitis.
- Colon. e.g. colitis.
- Liver. e.g. hepatitis, abscess.
- Lung. e.g. pneumonia.
- Kidney. e.g. pyelonephritis.

Periumbilical Pain

- Colon.
- Stomach.
- Small intestine. e.g. obstruction.
- Vessels.

Epigastric Pain

- Biliary system.
- Heart. e.g. myocardial infarction, pericarditis.
- Stomach. e.g. peptic ulcer, gastritis.

Right Lower Quadrant Abdominal Pain

- Colon. e.g. appendicitis, diverticulitis, irritable bowel syndrome.
- Gynecologic. e.g. ectopic pregnancy, ovarian mass, torsion.
- Kidney.

A. Abd-Elseyed (✉)
Department of Anesthesiology, University of
Wisconsin School of Medicine and Public Health,
Madison, WI, USA
e-mail: abdelsayed@wisc.edu

Suprapubic Pain

- Colon.
- Gynecologic.
- Kidney.

Left Lower Quadrant Pain

- Colon.
- Gynecologic.
- Kidney.

Abdominal Wall Pain at Any Part of the Abdomen

- Muscle strain.
- Hernia.
- Post-operative at incision sites.
- Herpes zoster.

Diagnosis

Taking a complete medical history is the initial step to help achieve a diagnosis. Patient may complain of vomiting of blood as in peptic ulcer, lack of bowel movement as in intestinal obstruction, left upper quadrant pain related to the spleen in sickle cell anemia patients and similar complaints.

A physical exam is then performed. Patient may have tenderness over one area of the abdomen as summarized above which can point to certain organ diseases. Patients with peritonitis tend to be still while patients with renal colic tend to be restless and moving around. Auscultation can reveal cardiac murmurs or abnormal lung sounds in cardiopulmonary diseases. There are many specific signs that refer to specific diseases, for instance;

- Carnett's sign (increased pain when a supine patient tenses the abdominal wall by lifting the head and shoulders off the exam table) in patients with abdominal wall pain.

- Murphy's sign in patients with cholecystitis.
- Psoas sign in patients with a retroflexed appendicitis.

Rectal exam may reveal obstruction, masses or impaction. Vaginal exam may reveal masses, discharge, or vaginitis [2–4].

Investigations

Lab work should be ordered if needed. For example, liver function tests if liver is thought to be involved, or a complete blood count (CBC), which may show an increased white blood cell count if infection is suspected. Renal function tests may be abnormal if kidney disease is the cause.

Images can be ordered to aid the diagnosis: ultrasound, computed tomography (CT), magnetic resonance imaging (MRI) and X-ray.

Endoscopy and colonoscopy can be ordered for selected patients when needed.

Treatment

A multidisciplinary approach is highly recommended. If pain cause is identified, then treating the cause should be the main treatment. Other adjuvant pain medications can be used such as antidepressants, anticonvulsants and non-steroidal anti-inflammatory drugs (NSAIDs).

Interventional procedures as celiac plexus block, transversus abdominis plan block can be used for patients who fail conservative management.

Neuromodulation has been used as well.

Pain psychology is recommended especially in cases when no cause can be identified.

High Yield Points

- Abdominal pain may originate from the abdominal wall or internal viscera.
- Each part of the abdomen corresponds to certain internal organs and structures.

Questions

1. A 28 year old man had an appendectomy 3 months ago. The patient continues to complain of pain at the incision/scar site that did not respond to medications. Which intervention would you recommend for him, after appropriate studies have failed to identify an organic source of the pain?
 - A. TAP block
 - B. Ganglion impar block
 - C. Celiac ganglion block
 - D. Superior hypogastric blockAnswer: A
2. Celiac plexus block can improve the following types of pain:
 - A. Parietal pain
 - B. Visceral pain
 - C. Pelvic pain
 - D. All of the aboveAnswer: B
3. A 45 year old woman has complaints of abdominal pain related to treatment of her colon cancer. The patient has kidney dysfunction with no other significant medical history or physical findings. Which medication/treatment would you use at first?

- A. Opioids
- B. NSAIDs
- C. Antidepressants
- D. Ketamine infusion therapy

Answer: C

References

1. Kamin RA, Nowicki TA, Courtney DS, Powers RD. Pearls and pitfalls in the emergency department evaluation of abdominal pain. *Emerg Med Clin North Am.* 2003;21(1):61–72.
2. Srinivasan R, Greenbaum DS. Chronic abdominal wall pain: a frequently overlooked problem. Practical approach to diagnosis and management. *Am J Gastroenterol.* 2002;97(4):824–30.
3. Adedeji OA, McAdam WA. Murphy's sign, acute cholecystitis and elderly people. *J R Coll Surg Edinb.* 1996;41(2):88–9.
4. Buckley RG, King KJ, Disney JD, Gorman JD, Klausen JH. History and physical examination to estimate the risk of ectopic pregnancy: validation of a clinical prediction model. *Ann Emerg Med.* 1999;34(5):589–94.