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Assessment and Treatment of Severe Abdominal Discomfort in the Emergency Department

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ABSTRACT
Evaluation of patients with acute abdominal discomfort in the emergency room might be difficult at times. Diverse circumstances can conceal the clinical presentation, delaying or preventing the right diagnosis, resulting in negative patient outcomes. Clinicians must evaluate numerous diagnoses, particularly those that necessitate prompt intervention to reduce morbidity and mortality. This article will review general facts on abdominal discomfort and address the clinical approach through a review of the patient's medical history and physical exam. In addition, the approach to unstable individuals with stomach pain will be discussed.

Keywords: acute abdomen, emergency medicine, peritonitis

1. INTRODUCTION

In 2006, abdominal discomfort accounted for 8 million (7%) of the 119 million visits to the emergency department (ED). [1] Those who practise emergency medicine (EM) must be competent in the evaluation of abdominal discomfort. Even though stomach discomfort is a common symptom, it must be taken seriously because it is frequently an indication of a serious disease and may be misdiagnosed. In a significant proportion of medicolegal proceedings against both general and paediatric EM physicians, abdominal pain is the presenting complaint.[2,3] Despite diagnostic and therapeutic improvements (computed tomography [CT], ultrasonography, and laparoscopy), the misdiagnosis rate of the most common surgical emergency, acute appendicitis, has changed little over time. This should humble the modern clinician.

Location

Embryology determines where a patient will "experience" visceral pain, which is typically reported in the midline since afferent signals from visceral organs are not precisely targeted. Distention, strain, forceful contraction, and ischemia can all excite visceral nociceptors. Pain from the stomach, pancreas, liver, biliary system, and proximal duodenum will often be felt

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in the epigastric region. Visceral pain linked with the remainder of the small intestine and the proximal third of the colon, including the appendix, is perceived in the periumbilical region. Pain in the suprapubic region is typically caused by structures of the hindgut, such as the bladder and the distal two-thirds of the colon, as well as genitourinary organs of the pelvis. Typically, retroperitoneal structures such as the aorta and kidneys cause back pain.[5]

Intensity

However, statements of milder pain cannot be relied upon to rule out serious illness, particularly in older individuals who may underreport symptoms.

Patterns of pain radiation and referral

The brain circuits generate predictable pain referral and radiation patterns. Kehr's sign is a classic example of shoulder pain caused by diaphragmatic irritation, typically due to free intraperitoneal blood. [11] Any other diaphragm-adjacent inflammatory condition or organ might likewise induce referred shoulder pain. Biliary disease-related ipsilateral scapula pain is another well-described occurrence. Radiation may also indicate the progression of an illness, such as persistent aortic dissection or ureteral stone passage. It is essential to note, while evaluating referred pain, that deep musculoskeletal structures (particularly of the back) are innervated by visceral sensory fibres with similar properties to those originating from intra-abdominal organs. These fibres converge in the spinal cord, resulting in the formation of "scleratomes": referral regions in the abdomen and flanks. In circumstances where a patient's apparent location of symptoms is absolutely unrevealing on physical examination, musculoskeletal structures should be thoroughly evaluated. [12]

Vomiting

Almost any gastrointestinal disorder can cause vomiting. Pain typically precedes vomiting in surgical situations, with the exception of esophageal rupture caused by violent vomiting. [10,17] Unless the blockage is minor or the patient presents early in the course, it is frequently present in patients with small bowel obstruction. Many other dangerous conditions, including obstruction of the large intestine, frequently manifest without vomiting. The nature of the vomiting may aid in the diagnosis. The development from stomach contents to bilious to feculent emesis is expected as the length of small intestinal obstruction rises. Frequent nonbilious retching may suggest gastric volvulus,[18] while repeated nonbilious vomiting may indicate occlusion of the stomach outlet. Blood or bile should be noted if present. In infants, bilious vomiting is always seen as an indicator of a significant gastrointestinal condition, such as intestinal malrotation. 19 Blood or coffee-ground vomits are typically the result of gastrointestinal or hepatic disorders. Massive hematemesis in a patient with a history of abdominal aortic aneurysm repair could be the result of an aorto-enteric fistula. 20 Vomiting resulting from more benign causes, such as viral or food-borne sickness, is self-limiting.

Other symptoms

Many illnesses of the genitourinary tract can manifest as abdominal pain. In contrast, any inflammatory illness adjacent to the genitourinary tract (such as appendicitis, cholecystitis, pancreatitis, or any inflammatory bowel disease) can cause both pyuria and dysuria. This can lead to incorrect diagnoses of both gastrointestinal and genitourinary disorders. Testicular

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torsion can manifest in men with abdominal pain, nausea, and vomiting. The enlargement of the uterus during pregnancy can cause discomfort and shift abdominal organs, complicating the diagnosis of many abdominal illnesses, notably appendicitis, in women. For these reasons, it is important to get a menstrual (if appropriate), sexual, and genitourinary history from the majority of patients with stomach pain. The presence of normal, regular menstruation should not invalidate the possibility of pregnancy. 25 Cough and dyspnea are cardiopulmonary symptoms that may indicate a non-abdominal source of abdominal discomfort. Syncope may suggest chest (pulmonary embolism, dissection) or abdominal disease (dissection, dissection) origin (acute aortic aneurysm, ectopic pregnancy).

Vital signs

Abnormalities in vital signs should alert the physician to a serious cause for the stomach ache. However, normal vital signs do not rule out the possibility of a serious condition. Fever implies an infectious cause or complication, yet it is usually absent when an infectious agent causes stomach discomfort. The majority of patients with acute cholecystitis and approximately 30% of patients with appendicitis do not experience fever.[15,27] Tachypnea may be a generic symptom, but it should prompt the evaluation of chest disease or metabolic acidosis caused by conditions such as ischemic bowel disease or diabetic ketoacidosis.

Abdominal examination

The emergency physician must be conversant with the key elements and limitations of an abdominal examination. In particular, each detection method for peritonitis will generate both false-negative and false-positive results.

The psoas symbol

The psoas sign is induced by having a supine patient elevate their thigh against hand resistance, or by having them lie on their contralateral side with their hip joint passively extended. Increased discomfort signifies stimulation of the psoas muscle by an adjacent inflammatory condition. Positive results on the right are a classic indicator of appendicitis.[13-15] Other retroperitoneal inflammatory diseases, such as pyelonephritis, pancreatitis, and psoas abscess, will also produce similar symptom.

The sign obturator

With the patient supine and the examiner supporting the patient's lower extremity with the hip and knee flexed to 90 degrees, the obturator sign is elicited. The presence of pain during passive internal and external rotation of the hip shows the presence of an inflammatory condition next to the muscle deep in the lateral walls of the pelvis. Possible diagnosis include right-sided pelvic appendicitis, sigmoid diverticulitis, pelvic inflammatory disease, and ectopic pregnancy. [18-20]

The correct location for an unstable patient with an acute abdominal aortic aneurysm is the operating room or, in some facilities, the interventional suite for emergency stent implantation. Attempts to obtain CT imaging may result in fatal treatment delays. With a high clinical index of suspicion (if possible, supported by emergency bedside ultrasonography), the majority of patients sent directly to surgery will be diagnosed with an acute AAA, and the vast majority of the remaining patients will have an alternative diagnosis that still requires surgical intervention.

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Diagnostic studies and disposition

Appropriate diagnostic testing is discussed in the appropriate chapters for various entities; nevertheless, it must be stressed that imaging and laboratory investigations have major limits in the evaluation of acute abdominal pain, and that all diagnostic tests have a false-negative rate. If the patient's medical history and physical examination indicate a high possibility of a disease prior to testing, a negative test cannot rule out the diagnosis. In the case of significant infections such as appendicitis or cholecystitis, for instance, the total leukocyte count may be normal. [22-24]CT is commonly utilised in the examination of patients with abdominal pain. Clinicians are charmed with the current technological advancements that have enabled higher imaging resolution, quicker acquisition times, coronal and three-dimensional reconstruction, and enhanced image resolution. However, it remains an imprecise diagnostic for appendicitis and may contribute little to the clinical evaluation**.**

The oft-repeated dictum "treat the patient, not the test" clearly applies to a patient with acute stomach pain. Unanticipated negative test results should trigger a reevaluation of the patient and consideration of surveillance and repeat testing for illness progression. When the diagnosis is uncertain, serial assessment as an inpatient in an observation unit or in the emergency department is a prudent [25-27]course of action. When a patient is discharged home following an evaluation for stomach discomfort, the authors suggest that they be instructed to return if the pain increases, if new vomiting or fever develops, or if the pain persists for more than 8–12 hours.[28-30] Such recommendations are intended to ensure the return of a patient who has advanced from an early appendicitis or small intestinal blockage, the two most prevalent surgical conditions associated with erroneous ED discharge.

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