Acute Abdominal Pain for the General Physician - who, when and how to refer to the on-call surgeon

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Abstract

Patients with abdominal pain are most frequently referred to the on-call surgical team, but there are occasions when physicians may be required to assess, investigate or treat such patients. This article aims to equip non-surgeons with the skills to undertake an appropriate initial assessment and consider the most appropriate selection, timing and mode of referral to the surgical team.

Keywords

Abdominal pain, peritonitis, clinical assessment, surgery

Introduction

The traditional separation of the 'medical' and 'surgical' take in most hospitals usually results in patients complaining of abdominal pain being referred to the surgical team. As indicated from the list of 'surgical' causes of abdominal pain in Table 1, this is often entirely appropriate. The 'correct' localisation of such patients enables regular surgical review, which will help to determine the need for and timing of operative intervention. However the drawback to this approach is the deskilling of physicians in the assessment and initial management of such patients. Moreover, there is a significant 'grey area' in determining the most appropriate point of referral within this structure. Elderly patients may present in a non-specific manner, the problem only becoming apparent after arrival on the medical admissions unit; in some cases co-existent medical pathology may lead the referrer to consider that the patient should be primarily cared for by a physician; others may develop their abdominal symptoms while on a medical ward being treated for another condition. In addition there is a large number of 'medical' conditions (Table 2) which may present with abdominal pain.

Who should I refer to the surgeon?

In simplistic terms patients should be referred to surgeons if they are likely to require surgery. Clearly patients with peritonism fall into this category, and identification of this is a crucial part of the assessment process; however surgeons will often be more experienced than physicians in the management of patients with conditions for which an operation is not usually required, such as pancreatitis. Early involvement of a surgeon may be valuable for such patients.

Clinical assessment

So what are the specific features that imply a 'surgical' cause for the patients symptoms? As with any condition, assessment of the patient with abdominal pain is based upon the history,

Biliary colic / acute cholecystitis
Perforated gastric / duodenal ulcer
Acute pancreatitis
Acute intestinal obstruction
Acute mesenteric ischaemia / infarction
Meckel's diverticulum
Acute perforative appendicitis
Acute diverticulitis
Torsion of ovary
Ruptured ovarian cyst
Ectopic pregnancy
Acute salpingitis

Table 1. Common surgical causes of abdominal pain.

Cardiac:	Myocardial infarction
	Acute pericarditis
Pulmonary:	Pneumonia
	Pulmonary infarction
Gastrointestinal:	Gastroenteritis
	Acute hepatitis
Endocrine:	Diabetic ketoacidosis
	Acute adrenal insufficiency
Metabolic:	Acute porphyria
Musculoskeletal:	Rectus sheath haematoma
Genitourinary:	Pyelonephritis
Haematological:	Sickle cell crisis
Neurological:	Tabes dorsalis
	Nerve root compression

Table 2. Common medical causes of abdominal pain.

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S	site
O	onset
C	character
R	radiation
A	associated symptoms
T	time course
E	exacerbating / relieving factors
S	system review

Table 3. Pnemonic for acute abdominal pain

examination and investigations. The 'SOCRATES' pnemonic (Table 3) may help to provide a systematic approach to the history in these patients.

1. Site

The site of onset of pain provides an important clue as to its origin and is based upon the embryological development of the gut. Pain in the foregut, originating for example from peptic ulceration or pancreatitis manifests as epigastric pain, midgut pain is experienced periumbilically, as in early appendicitis, and hindgut pain is perceived in the lower abdomen. Intra-abdominal inflammation and localised peritonitis will result in pain localised to one area of the abdomen. Widespread pain affecting the entire abdomen may suggest generalised peritonitis.

2. Onset and Character

Continuous abdominal pain that comes on suddenly 'like a thunder-clap' suggests that a significant intra-abdominal event, such as the perforation of a viscus, has occurred. This may be from a peptic ulcer in the stomach or duodenum or from a colonic diverticulum. If the pain is predominantly in the back, and associated with collapse, then a ruptured aortic aneurysm must be suspected. Colicky pain may also occur suddenly, but importantly it is not constant, comes 'in waves' and subsides after a period of time. It may be biliary (lasting up to one hour), small bowel (lasting minutes), ureteric or uterine (usually seconds to minutes). Pain of gradual onset that becomes increasingly severe suggests an evolving inflammatory process such as cholecystitis or diverticulitis.

3. Radiation

The radiation of 'surgical' pain in the abdomen occurs with the evolution of the disease process, resulting in recognisable patterns of symptoms. In acute appendicitis the initial periumbilical midgut discomfort is replaced by localised pain as the inflamed appendix comes into contact with the parietal peritoneum. Duodenal ulcer perforation results in the release of bile and gastric secretions into the peritoneal cavity. Due to the peritoneal attachments of the abdominal viscera these are channelled down the right paracolic gutter resulting in epigastric pain that radiates to the right iliac fossa. Evolving pancreatitis produces surrounding inflammation of the retroperitoneal soft tissues leading to pain radiating through to the back. In contrast cholecystitis leads to diaphragmatic irritation and pain that radiates around to the back or 'referred' to the shoulder tip; the result of a shared afferent nerve supply. Pain of gynaecological origin often radiates to the lower back and ureteric colic is typically described as "loin to groin" pain.

4. Associated symptoms

Symptoms of altered bowel function such as anorexia, nausea, vomiting and bowel disturbance are not specific to patients presenting with an acute abdomen. They may however occur as a direct result of the disease process, as in bowel obstruction, when pain is accompanied with effortless vomiting and absolute constipation.

5. Time course

Most patients who present with acute abdominal pain give a short history of symptoms lasting only a few days. Continuous pain of more than six hours' duration increases the likelihood that some form of surgical intervention will be required and appropriate surgical review should be sought.

6. Exacerbating/relieving factors

It is important to ascertain whether movement exacerbates the pain, as this is suggestive of peritonism and a 'surgical' cause for the symptoms. This is best elucidated indirectly by enquiring about the patient's journey to hospital: a journey by road with pain exacerbated 'over the bumps' is highly suggestive of peritoneal irritation.

7. System review

A patient's past medical history may highlight relevant conditions such as Crohn's disease. Previous abdominal surgery will exclude some causes of abdominal pain, and increase the likelihood of adhesions, which is the commonest cause of small bowel obstruction. Medication such as anti-inflammatory drugs can cause peptic ulceration and bleeding. Corticosteroids are immunosuppressive and may mask significant intra-abdominal pathology. Seemingly unrelated symptoms may also aid in making a diagnosis. For example a patient with a productive cough and right upper quadrant pain may have pneumonia. Cardiac sounding chest pain may suggest mesenteric embolus and ischaemia.

When should I refer to the surgeon?

The initial history from the patient should highlight those patients with a suspected 'surgical' cause for their symptoms. But what features would require an immediate, as opposed to next-day surgical review? Symptoms suggestive of a perforated viscus, a ruptured aneurysm, bowel obstruction or generalised peritonitis require immediate surgical review. Patients with localised peritonitis, secondary to suspected appendicitis, cholecystitis or diverticulitis can generally wait overnight, although the patient should be discussed with the duty surgical team so that appropriate treatment can be initiated. These features should be apparent following careful, systematic examination of the patient's abdomen, performed with the patient supine.

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Observations such as tachycardia and hypotension can be the result of shock, dehydration and third space fluid losses into the gut and abdomen. The presence of an irreducible hernia on abdominal examination requires immediate surgical assessment, particularly if there is overlying discolouration of the skin. This is suggestive of strangulation and emergency surgery is indicated.

What can I be doing in the meantime?

Having postulated a 'surgical' cause for the patients symptoms, what do you do next? Firstly, and contrary to popular myth, opiates do not mask signs of peritonitis in patients with acute abdominal pain and adequate analgesia must be given. This should be given intravenously and the dose titrated until the patient is comfortable. Patients should be kept 'nil by mouth' and intravenous fluid resuscitation commenced with either Hartmanns solution or Normal Saline. This may necessitate high volumes and it is not uncommon for a patient with bowel obstruction to receive four litres of fluid in the initial eight hours of resuscitation. The patient should be catheterised and regular nursing observations instigated including the accurate charting of fluid balance. Central venous pressure monitoring should be considered for older patients and those with co-existent renal or cardiac failure.

Initial investigations should include urinalysis, which may point towards a diagnosis of urinary sepsis or ureteric colic. In addition all women of childbearing age must have a β human chorionic-gonadotrophin pregnancy test, as ruptured ectopic pregnancy remains a potentially fatal cause of abdominal pain if missed. Routine blood tests include full blood count, renal and liver function, amylase, C-reactive protein, clotting and group & save. Markedly elevated serum amylase is diagnostic of pancreatitis, although a mild elevation occurs in peptic ulcer perforation, mesenteric ischaemia and abdominal aortic aneurysm rupture. Arterial blood gases should also be performed in all 'unwell' patients, as elevated lactate and metabolic acidosis are often present. The combination of a markedly raised total white cell count and severe metabolic acidosis is suggestive of mesenteric infarction.

All patients with suspected peritonism should undergo an erect chest X-ray; this will detect as little as 1ml of intra-abdominal gas and is 95% sensitive for detection of a perforated viscus. Plain abdominal x-ray is helpful in cases of suspected intestinal obstruction. Abdominal ultrasound is often more useful than X-ray in patients with suspected peritonism, where the presence of free fluid is often noted. Other pathologies such as biliary or ureteric calculi may also be identified on ultrasound, although the limited availability of this investigation out-of-hours may be a problem in many hospitals.

Antibiotic treatment should be considered for any patient with suspected peritonism; the combination of intravenous cefuroxime 750mg tds and metronidazole 500mg tds is advocated by most surgeons and will cover most gut-related pathogens.

How should I make the referral?

Most surgeons are affable fellows and keen to give an opinion particularly if there is the possibility that surgery may be required. The person making the referral should have seen the patient themselves and have a clear understanding of the reason for surgical referral; delegation of this job to the most junior member of the team is inappropriate. Current observations including pulse, blood pressure and urine output should be available. If immediate surgical intervention is not thought to be appropriate, then deferring referral until after blood results are available is usually preferable. If the patient is imminently due to be moved from the admissions area it is helpful to inform the surgeon at the time of referral as this will save a 'safari' tour of the hospital.