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## **Clinical Skills Workshop**

### **THE DIFFERENTIAL DIAGNOSIS OF LEFT-SIDED ABDOMINAL PAIN IN A 40-YEAR OLD FEMALE WITH A PRESENTING COMPLAINT OF SACRAL PAIN**

#### **Abstract**

Pain in the abdomen is one of the most frequent symptoms experienced by women and the diagnostic approach requires a wide range of consultative skills. In the absence of results from hospital investigations, in addition to a lack of a detailed and comprehensive case history, it is imperative to base the diagnostic model on a generalised level whilst being equally selective in respect of epidemiology. The assessment of clinical features and findings in the process of differential diagnosis should include psychological and emotional influences since psychoneuroimmunological studies have firmly established clear physiological links between mind and body. Moreover, the increased prevalence of stress-related disorders has further emphasised the need for a holistic approach to diagnosis and treatment. Issues that continue to baffle conventional medicine may serve to highlight the need for a closer alliance between orthodox practitioners and alternative therapists in the healthcare management of not only individuals, but the whole community at large.

## Introduction

Pain is indispensable for a normal life. It provides a useful and general indicator of disturbed function and must always be viewed in conjunction with other aspects of the diagnostic process. Additionally, a presenting symptom involving pain should always be considered seriously since the implications can range from the purely pathophysiological to the psychological or even psychiatric in origin. In detailing the differential diagnosis of any presenting complaint it is imperative to consider its implications in context with all other aspects of the medical history. In this respect, the acute or chronic abdomen has much emphasis as the sacral pain; anatomically, the association is clear. Moreover, much more significance should be attached to a recent change in bowel habit rather than to a very long history of diarrhoea or constipation (Beck et al., 1995).

Additionally, the rapidly-expanding scientific field of psychoneuroimmunology (PNI) and its recognition in orthodox medicine has a fundamental role in differential diagnosis. Awareness of its relevance to issues pertaining to illness and disease may determine the competent assessment and diagnosis of conditions presented in clinical practice (Watkins, 1997). Given the case history, it is important to regard the associated symptoms with due consideration, particularly those of alarming importance such as blood in stools and the implied weight loss. Furthermore, clinical findings should have equal consideration as the presenting complaint and medical history, particularly if they confirm initial suspicions of serious pathologies or provide sufficient evidence for an immediate referral. Medical bias often prevails in cases of symptomatic disorders and despite the supporting evidence of clinical findings, it is perhaps good practice to consider PNI influences in a holistic framework prior to making a prudent clinical judgement.

This report examines the systematic approach to differential diagnosis of a 40-year old female teacher presenting with sacral pain and with a 5 month history of left sided abdominal pain. Clinical features of the most common causes of abdominal pain in the left lumbar and LIF regions are discussed in relation to epidemiology. Due consideration is given to the less frequent and rarer causes of the symptoms in question, in context with information provided on previous and current medical history.

Thus, the following will be discussed :

- differential diagnosis of sacral pain (p/c)
- differential diagnosis of left-sided abdominal pain
- differential diagnosis of blood in stools
- differential diagnosis of change in bowel habit
- analysis of clinical findings
- discussion of possible investigations to be conducted
  - to make/confirm a diagnosis
  - elucidate other possible and/or plausible pathologies
- summary and prognosis

## Differential diagnosis of sacral pain (p/c)

To regard the presenting complaint solely as lower back pain would be grossly inaccurate given the case history. It should not be considered in isolation neither should there be reduced emphasis on manifestation as there may be a concurrent clinical presentation involving the M-S system in addition to the GIT and/or reproductive systems.

Ostensibly, differentiating the origins of the back pain is of crucial importance. In this respect, the physical examination should include a rectal and pelvic evaluation, especially patients over 40 years and in those without a history or physical findings that are characteristic of common causes of backache (Seller, 2000). Indications of systemic inflammatory disease eg. iritis, urethritis or arthritis may be gleaned from examination of the breast, thyroid, lymph nodes and peripheral pulses. In context with current clinical presentation and medical history, Table 1 highlights some of the acquired causes of low back pain and prospects for diagnosis.

**TABLE 1 – Differential diagnosis of backache; acquired causes and prospects for diagnosis**

*(Adapted from Raftery & Lim, 2001)*

ACQUIRED	CAUSE	PROSPECTS FOR DIAGNOSIS
Traumatic	<ul style="list-style-type: none"> <li>• Vertical fractures</li> <li>• Ligamentous injury</li> <li>• Joint strains</li> <li>• Muscle tears</li> </ul>	Nothing in the case history to indicate a trauma or lesions from it
Infective	<ul style="list-style-type: none"> <li>• Osteomyelitis (acute &amp; chronic)</li> <li>• TB</li> </ul>	History of TB not specified & additional symptoms of spinal TB absent. Osteomyelitis – may occur with diabetics & immunocompromised
Inflammatory	<ul style="list-style-type: none"> <li>• AS</li> <li>• Discitis</li> <li>• Rheumatological disorders</li> </ul>	Limited information in case history – unlikely diagnosis
Neoplastic	<ul style="list-style-type: none"> <li>• 1° tumours (rare)</li> <li>• Metastases</li> </ul>	Patient is usually unwell with unrelenting pain. Poss past history of 1° tumour but unlikely in this patient
Degenerative	<ul style="list-style-type: none"> <li>• Osteoarthritis</li> <li>• Intervertebral disc lesions</li> </ul>	OA usually present in the older patient. Limited info for poss diagnosis. Intervertebral disc lesion => sudden onset of pain radiating to leg (sciatica)

Metabolic	<ul style="list-style-type: none"> <li>• Osteoporosis</li> <li>• Osteomalacia</li> </ul>	<p>Osteoporosis – more common in post-menopausal ♀</p> <p>Osteomalacia – history of gastrectomy, steatorrhoea, renal failure or anticonvulsant therapy</p>
Endocrine	<ul style="list-style-type: none"> <li>• Cushing's disease (osteoporosis)</li> </ul>	<p>May be a history or long-term steroid therapy – limited info for poss diag.</p>
Idiopathic	<ul style="list-style-type: none"> <li>• Paget's disease</li> <li>• Scheuermann's disease</li> </ul>	<p>Paget's – usually occurs in &gt;40 years. Other changes not noted; unlikely diag</p> <p>Scheuermann's – backache in adolescence; unlikely diagnosis.</p>
Psychogenic	<ul style="list-style-type: none"> <li>• Psychosomatic backache (common)</li> </ul>	<p>Very common; possible diag. if presents with anxiety, depression &amp; compensation neurosis</p>
Visceral	<ul style="list-style-type: none"> <li>• Penetrating peptic ulcer</li> <li>• Carcinoma of pancreas</li> <li>• Carcinoma of rectum</li> </ul>	<p>Ulcer – more epigastric pain radiating to back (not to sacrum)</p> <p>Pancreatic tumour – unrelenting, boring, not colicky pain; unlikely diag.</p> <p>Rectal Tumour – invasion of sacrum &amp; sacral plexus =&gt; low back pain with sciatica; unlikely diagnosis</p>
Vascular	<ul style="list-style-type: none"> <li>• Aortic aneurysm</li> <li>• Acute aortic dissection</li> </ul>	<p>Aneurysm – pulsation noted by patient</p> <p>Dissection – accomp .by chest pain, patient usually shocked; unlikely diag.</p>
Renal	<ul style="list-style-type: none"> <li>• Uterine tumours</li> <li>• PID</li> <li>• Endometriosis</li> </ul>	<p>Usually low back pain (esp sacral) assoc. with pelvic discomfort. Assoc gynae symptoms of dysmenorrhoea, menorrhagia &amp;</p>

	post-menopausal bleeding; possible diagnosis
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**NB.** Most causes are either traumatic or degenerative but other causes are numerous & may occur as a result of pathology in almost any system of the body.

**NNB.** Congenital causes (kyphosis, spina bifida, spondylolisthesis) are unlikely diagnoses since they would have been detected early on in the medical history.

Identifying the origins of the back pain ie. whether neurological, musculo-skeletal or referred will require physical examination of the patient, particularly for invading masses in the viscera which produce classic low back (sacral) pain. General (eg. FBC, SR, spinal X-Ray) and specific investigations (eg. CT scan, MRI, serum [Ca<sup>2+</sup>]) may confirm initial suspicions.

### Differential Diagnosis of Left-Sided Abdominal Pain

Important determinants of a differential diagnosis requires a comprehensive case history, an appropriate medical examination, further specific tests such as endoscopy or laparoscopy and a thorough analysis of clinical findings. The latter will be discussed later. In the absence of such, all possible causes must be considered that may be relevant in a 40-year old female, complaining of left-sided abdominal pain.

One of the most common causes of lower abdominal pain in women which has posed one of the greatest challenges in clinical medicine with regard to definition and aetiology is IBS. It is often classified under functional bowel disorders along with functional (non-ulcer) dyspepsia (Ballinger & Patchett, 2000). Significantly, there is also wide overlap with chronic fatigue syndrome, dysmenorrhoea and urinary frequency (Haslett et al., 1999). Table 2 summarises all likely diagnoses of the presenting abdominal complaint in light of the medical history. Establishing the probability of the most common cause of left-sided abdominal pain must involve reviewing the associated features and the specific nature of clinical presentation in this patient. In that respect, a few of the more common diagnoses will be discussed in a little detail.

**TABLE 2 – Differential diagnosis of left-sided abdominal pain in a 40-year old woman***(Adapted from Hopcroft & Forte, 1999 and Souhami & Moxham, 1998).*

Common Causes	
GIT	<ul style="list-style-type: none"> <li>• IBD (Crohn's, UC)</li> <li>• IBS (Functional Bowel Disease)</li> <li>• Lower Intestinal Obstruction (eg. Colorectal disease, large bowel obstruction)</li> <li>• Constipation (neuropathic colon)</li> <li>• Diverticular disease</li> </ul>

Repro / Gynae (pathological & physiological)	<ul style="list-style-type: none"> <li>• PID</li> <li>• Endometriosis</li> <li>• PCOS</li> <li>• Ovarian cysts</li> <li>• Mittelschmerz</li> <li>• 1° Dysmenorrhoea</li> <li>• Left Ovarian neoplasm</li> <li>• Pelvic congestion</li> </ul>
Adhesion	<ul style="list-style-type: none"> <li>• Pelvic</li> <li>• Abdominal</li> </ul>
Urinary	<ul style="list-style-type: none"> <li>• Recurrent UTI</li> </ul>
<b>Occasional causes</b>	
GIT	<ul style="list-style-type: none"> <li>• Malabsorption syndrome</li> <li>• Coeliac disease</li> <li>• IBS</li> <li>• Pancreatitis (radiation to the back)</li> </ul>
Gynae / Repro	<ul style="list-style-type: none"> <li>• Pelvic abscess (PID)</li> <li>• Endometriosis</li> <li>• Pelvic congestion (exacerbation of pelvic pain syndrome)</li> <li>• Salpingitis</li> </ul>
Urinary	<ul style="list-style-type: none"> <li>• Recurrent UTI</li> <li>• Ureteric colic</li> </ul>
Psychogenic	<ul style="list-style-type: none"> <li>• Psychiatric</li> </ul>
NS / Inflam	<ul style="list-style-type: none"> <li>• Spinal arthritis</li> </ul>
Infective	<ul style="list-style-type: none"> <li>• <i>Yersinia</i> Both mimic</li> <li>• <i>Campylobacter</i> Crohn's</li> </ul>
Structural	<ul style="list-style-type: none"> <li>• Mechanical low back pain</li> </ul>
Misc	<ul style="list-style-type: none"> <li>• [Uterovaginal prolapse] – unlikely</li> </ul>
	<ul style="list-style-type: none"> <li>• Benign tumours</li> <li>• Ovarian cysts</li> <li>• Fibroids</li> <li>• Chronic interstitial cystitis</li> <li>• IUCD (Intrauterine Contraceptive Device or Coil)</li> </ul>
<b>Rare Causes</b>	
Misc	<ul style="list-style-type: none"> <li>• Misplaced IUCD (perforated uterus)</li> <li>• Referred (eg. spinal tumour, bowel spasm)</li> <li>• Invasive carcinoma of ovaries or cervix</li> <li>• Fibroid degeneration</li> <li>• Strangulated femoral or inguinal hernia</li> </ul>

	<ul style="list-style-type: none"> <li>• Metabolic causes eg. Addison's disease, porphyria, lead poisoning</li> <li>• Volvulus</li> </ul>
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*NB. Overlap of some conditions arise between the categories owing to the variances in clinical research data, findings and statistical evidence conducted in different studies.*

Colorectal disease can be due to benign tumour of the large bowel (large bowel polyps) or due to colorectal carcinoma (adenocarcinomas). Either will produce colicky, abdominal pain as seen in this patient which can be suggestive of some kind of obstruction in the lower abdominal region. Typical clinical features of large bowel obstruction include a sudden onset of colicky pain, each spasm lasting less than 1 minute, usually hypogastric midline in manifestation and vomiting may be absent (or late), there is constipation with no flatus (Murtagh, 1998). However, a similar presentation may also occur in diverticulitis or volvulus of the sigmoid colon (10% of cases) and caecum (Hunt & Marshall, 1991).

Simple constipation may produce blood in stools (haemorrhoids); this needs to be distinguished from other causes. Moreover, it is imperative to examine any change in bowel habit. Diverticular disease can produce mass as well as blood per rectum; increased prevalence in the older age group does not preclude its occurrence in this patient. Functional bowel disorders such as IBS, has been mentioned in brief. This may present with similar symptoms but rarely is there blood per rectum (as is the case in IBD). Other conditions that are typical of IBS are malabsorption syndrome, coeliac disease, endocrinopathies such as thyrotoxicosis and hypothyroidism, as well as carcinoid syndrome.

Non-invasive manifestations of IBD can result in sacro-iliitis in up to 10% of patients; this will be confirmed by an abnormal liver function test. PID will produce pyrexia and will be confirmed by swab culture tests. Other gynaecological problems such as endometriosis and PCOS may have a cyclical involvement though not stipulated in this case history, tenderness in the left flank is not uncommon, Particularly in the lower region.

Aetiology of infective origin in this clinical presentation (especially *Yersinia* and *Campylobacter*) may mimic Crohn's disease; in this instance, microscopic tests and culture are strongly indicated.

### **Differential diagnosis of blood in stools**

Blood in stools is of utmost clinical significance, particularly when accompanied by weight loss and anaemia. Of importance however, is the actual colour of the blood in the stool, which has not been specified. Streaks of blood in stools indicate that it is fresh rather than the characteristic black, tarry dark stools of malaena. The latter is most commonly due to bleeding from the stomach or duodenum, or more rarely from the oesophagus (Bouchier et al., 1997). In such situations, it is generally associated with haematemesis before the malaena is apparent; this is not the case here.

An important criteria in the differential diagnosis is to establish lower abdominal bleed versus upper abdominal haemorrhage. Lesions distal to the duodenum generally give rise to dark or bright red blood in the stools rather than malaena. This is a more probable presentation with colicky

abdominal pain that is indicative of an invading mass / large bowel obstruction. Moreover, since there is preponderance to the constipated state, blood in stools may be due to haemorrhoids. However, given the clinical presentation and the recent change in bowel habit, there is strong evidence of large bowel obstruction possibly due to an invading mass or carcinoma.

Additionally, fresh blood passed per rectum could also be indicative of the following:

- rectal or sigmoid bleeding
- IBD
- ischaemic colitis
- diverticular disease or
- polyps (genetic).

Confirmation via prompt investigative procedures in this instance is vital in this case. Table 3 summarises the differential diagnosis of blood per rectum.

**TABLE 3 – Differential diagnosis of rectal bleeding (Adapted from Taylor, 2000)**

<b>Condition</b>	<b>Specific Examples</b>
Benign anorectal disorders	<ul style="list-style-type: none"> <li>• <b>Haemorrhoids (internal &amp; external)</b></li> <li>• <b>Anal fissures</b></li> <li>• <b>Varices</b></li> </ul>
Diverticular disease	
IBD	<ul style="list-style-type: none"> <li>• <b>UC</b></li> <li>• <b>Crohn's disease</b></li> </ul>
Infectious colitis or enteritis	<ul style="list-style-type: none"> <li>• <b>Viral</b></li> <li>• <b>Bacterial</b></li> </ul>
Ischaemic colitis	-
Neoplasia	<ul style="list-style-type: none"> <li>• <b>Benign adenomatous polyps</b></li> <li>• <b>Adenocarcinoma</b></li> </ul>
Coagulopathis	
Arteriovenous malformations	<ul style="list-style-type: none"> <li>• <b>Vascular ectasias</b></li> <li>• <b>Angiomas</b></li> <li>• <b>Angiodysplasia</b></li> </ul>
Upper GIT haemorrhage	<ul style="list-style-type: none"> <li>• <b>Gastritis</b></li> <li>• <b>Gastric ulcer</b></li> <li>• <b>Duodenal ulcer</b></li> <li>• <b>Mallory-Weiss tear</b></li> </ul>

	<ul style="list-style-type: none"> <li>• Oesophageal varices</li> <li>• Neoplasms</li> <li>• Hereditary haemorrhagic telangiectasia (Rendu-Osler-Weber disease)</li> <li>• Epistaxis</li> <li>• Aortoenteric fistula</li> </ul>
Small intestinal haemorrhage	<ul style="list-style-type: none"> <li>• Arteriovenous malformations</li> <li>• Diverticula (Meckel's)</li> <li>• Regional enteritis</li> <li>• Neoplasia</li> <li>• Aortoenteric fistula</li> </ul>

### Differential diagnosis of change in bowel habit

Changes in bowel habit without intentional dietary modifications should always be viewed with concern, particularly in the presence of associated symptoms, as in this case history. Alarming, it is a classic sign of early carcinoma pathology. How dietary and lifestyle factors have to be considered in attempting to assess 'normal' bowel habit in this patient. Episodes of constipation imply a blockage in the large intestine; reduced transit time and difficulty in defecation. Psychological aspects may be such that there is an autonomic influence associated with fear of defecation, which may then trigger a whole cycle of events leading to constipation (ie. psychogenic rather than organic in origin).

### Analysis of clinical findings

The comprehensive assessment of clinical findings in this patient reveals a presentation that provides cause for concern. For instance, 'thin and ill-looking' implies weight loss and a lack of vitality; both suggestive of serious pathologies. In conjunction with other features, this is an alarming finding; large bowel obstruction (eg. carcinoma) is the obvious red flag and prompt investigation is indicated. However, viewed in an optimistic light, voluntary dietary changes for intentional weight loss may well be the case. Moreover, considering the occupation, there is undoubtedly going to be a psychogenic element to this presentation. Catabolic glucocorticosteroids secreted during stress will cause protein breakdown resulting in reduced muscle mass and giving the appearance of weight of weight loss. When discussing issues in PNI, this cannot be discounted.

The terms 'thin' and 'ill-looking' are also subjective and lacking in clinical detail. However, there is clinical evidence of anaemia ( $\uparrow$  pulse,  $\uparrow$  breathing rate), all suggestive of the  $\text{Fe}^{2+}$  deficiency type as a result of obvious or even occult blood loss. Additionally, an increased body temperature of  $38.2^{\circ}\text{C}$  ( $100.8\text{ F}$ ) can be indicative of an underlying infection. However, it is also caused by neoplasia and granulomatous disease such as Crohn's; both of which fit his clinical presentation. The 'ill-defined tenderness' suggest an inflammatory response in the region of the descending and sigmoid colon. This could be caused by an invading mass or conversely, be symptomatic of IBD or diverticular disease.

## Possible investigations

Investigations are fundamental in confirming diagnosis and initial suspicions, particularly in 'red flag' cases. Table 4 list some of the possible exploratory and laboratory diagnostic tests and procedures that could have be instructed by this patient's GP, either in confirming diagnosis or to elucidate other plausible pathologies.

**TABLE 4 – Possible diagnostic tests & investigative procedures in Case 2 patient** (*Adapted from Souhami & Moxham, 1998 and Haslett et al., 1999*)

Test / Procedure	Comment
Double contrast barium enema	Obstruction due to masses in GIT
Colonoscopy	Obstruction or pathology in the colon
Liver ultrasound CT Scan	To detect spread of tumour
Rectal biopsy	Characteristic granulomatous histology in Crohn's
Stool sample – microscopy & culture	To exclude infective origin
FBC	<ul style="list-style-type: none"> <li>Anaemia</li> <li>Markers of inflammation or infection</li> </ul>
ESR	Inflammation in diverticular disease (esp if patient is persistently unwell with pyrexia)
Abdominal ultrasound	Detect abscess following perforation
Plain abdominal X-Ray	<ul style="list-style-type: none"> <li>May demonstrate colonic dilatation</li> <li>Ileocaecal TB</li> </ul>
Laparoscopy Endoscopy Sigmoidoscopy	Exploratory surgery to view the large intestine esp descending & sigmoid colon.  Also to view reprod organs for pathologies of gynaecological origin
Liver function tests	Can be abnormal in non-intestinal manifestations of IBD eg. sacro-iliitis

## Summary and prognosis

The clinical presentation of this patient reveals a number of possible pathologies that range from the moderate to the severe and from the organic to the psychogenic in origin. A confirmed diagnosis can only really be made following specific laboratory tests and/or exploratory investigations. However, the most extreme 'red flag' scenario of large bowel carcinoma should always be suspected unless otherwise ruled out.

From the outset, it is evident that prognosis is highly dependent on accurate diagnosis in addition to an effective and rigorous management plan. In this respect, addressing the immediate symptomatic presentation may reduce morbidity. However, in cases of carcinoma, timing is ostensibly the crucial factor in determining the eventual outcome.

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