Abdominal pain in pregnancy: a rational approach to management

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Abstract

Abdominal pain is the most frequent complaint amongst pregnant women throughout pregnancy and occurs in all three trimesters. Although, most commonly it is secondary to the anatomical, physiological, biochemical changes during pregnancy, it is essential to approach every case in a systematic manner. It is essential to exclude pathological causes of pain, both obstetric and non-obstetric, so as to improve outcomes.

The challenges during pregnancy include the anatomical changes causing displacement of the intra-abdominal organs by the gravid uterus and consequently, the absence or modification of the "classical" symptoms and signs as well as the physiological changes which alter the normal ranges of blood tests. In addition, anatomical distortion secondary to a gravid uterus may lead to difficulties in interpreting the results of radiological investigations, the presence of a fetus may pose a clinical dilemma with regard to performing tests and investigations. This is because some investigations may have an adverse impact on fetal wellbeing, and, any delay in performing these investigations in a timely manner so as to safeguard the fetus may increase the risks of complications to the mother.

Keywords ectopic pregnancy; miscarriage; placental abruption; preterm delivery; uterine rupture

Introduction

Abdominal pain is the most frequent complaint during pregnancy. Although, often it may be related to anatomical, physiological, biochemical and positional changes during pregnancy, it is essential to rule out 'pathological' obstetric and non-obstetric causes.

The rapid expansion of the uterus results in the stretching of the supporting ligaments (round ligaments) causing 'physiological' abdominal pain. This expansion also causes displacement and/or compression of several intra-abdominal organs (e.g. bowels, stomach, omentum and urinary tract). These changes in the anatomical location of these intra-abdominal organs may result in the absence or variation of the 'classical' symptoms and signs of certain non-obstetric pathologies such as appendicitis. Failure to recognize the altered presentation of these common pathologies (i.e. appendicitis) may result in delayed diagnosis, leading to rupture and/or peritonitis and thereby, increasing maternal morbidity and mortality.

A systematic and rational, multi-disciplinary approach is essential to exclude both obstetric and non-obstetric causes of abdominal pain (Table 1) to avoid delays in diagnosis.

It is also important to bear in mind the gestational age whilst assessing abdominal pain in pregnancy, as there are certain pathologies which are specific to each trimester of pregnancy. Whilst common causes of abdominal pain during the first trimester include miscarriage or ectopic pregnancy, as the pregnancy advances, the most common obstetric causes are the onset of uterine contractions (preterm or term labour, uterine irritability secondary to chorioamnionitis), uterine rupture or a placental abruption. Rarely, polyhydramnios may present with abdominal pain.

Obstetric causes of abdominal pain in early pregnancy

The most common obstetric causes of abdominal pain in early pregnancy include miscarriage, ectopic pregnancy and ovarian hyperstimulation syndrome.

Miscarriage

A miscarriage in the first trimester presents with a 'period-like pain' or 'cramping' pain, usually accompanied by spotting or frank vaginal bleeding.

On vaginal examination, the cervical os may be open in an inevitable or an incomplete miscarriage and products of conception can often be seen within the cervix or inside the vagina. An ultrasound will help to diagnose the presence of an intrauterine pregnancy and its viability and hence, will help differentiate between a missed, inevitable or complete miscarriage. If a complete miscarriage is diagnosed, generally no further management is required. However, if there is an incomplete miscarriage and ongoing heavy bleeding the patient may require emergency evacuation of the remaining retained products. A missed miscarriage can be managed medically or surgically depending on gestational age, clinical picture and patient's preference.

Ectopic pregnancy

Ectopic pregnancy is defined as the presence of a pregnancy outside the uterine cavity (most commonly in the Fallopian tubes). It may present with subtle symptoms such as mild abdominal pain, typically unilateral associated with vaginal spotting. On abdominal examination, there is unilateral iliac fossa tenderness and occasionally, cervical excitation and adnexal tenderness may be noted. A bimanual palpation may suggest a uterine size that is less than the period of amenorrhoea. If there is a ruptured ectopic pregnancy with haemoperitoneum, the patient usually presents with a sharp, stabbing abdominal pain and varying degrees of haemodynamic instability, ranging from changes in pulse rate or blood pressure to maternal collapse.

An empty uterine cavity on ultrasound with a β-hCG >1500 IU/L should arouse a strong suspicion of an ongoing ectopic

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Please cite this article in press as: Pinas-Carrillo A, Chandraharan E, Abdominal pain in pregnancy: a rational approach to management, Obstetrics, Gynaecology and Reproductive Medicine (2017), http://dx.doi.org/10.1016/j.ogrm.2017.01.009

Causes of acute and chronic abdominal pain and suggested investigations

Type of onset	Clinical conditions	Suggested investigations (Based on differential diagnosis)
Acute (within minutes or few hours)	**Obstetric**	**Imaging**
	Placental abruption	Obstetric ultrasound
	Impending or actual scar rupture	Abdominal ultrasound
	Adnexal torsion	MRI scan abdomen
	Hepatic rupture (HELLP)	Chest X-ray
	Pregnancy associated sickle cell crisis	Abdominal X-ray
	Non-obstetric	V/Q scan or CTPA
	Gastro-intestinal	Cardiac ECHO
	Acute appendicitis	**Blood tests**
	Acute gastritis	Full blood count
	Perforated peptic ulcer	CRP
	Acute mesenteric infarction	Urea & electrolytes
	Strangulated hernia	Renal function tests
	Volvulus	Liver function tests
	Acute pancreatitis	Serum amylase
	Biliary colic	Serum tryptase
	Diverticulitis	Blood gases
	Urinary system	Coagulation profile
	Ureter colic	Blood culture
	Renal colic	**Others**
	Calculi	High and low vaginal swabs
	Vascular and extra-pelvic	Urine (MSU) for microscopy and culture)
	Ruptured thoracic/abdominal aortic aneurysm	ECG
	Pulmonary embolism	CT chest
	Acute myocardial infarction	Consider multi-disciplinary input
Chronic (over few hours/days)	**Obstetric**	Anaesthetists
	Chorioamnionitis	Physicians
	Threatened preterm labour	Surgeons
	Non-obstetric	Cardio-thoracic
	Appendicitis	Hepatologists
	Mesenteric lymphadenitis	Gastroenterologists
	Strangulated hernia	Haematologists
	Chronic pancreatitis	
	Chronic peptic ulcer disease	
	Inflammatory bowel disease	
	Chronic cystitis and urinary retention	

Table 1

pregnancy, and a careful adnexal examination may show a tubal ectopic pregnancy on ultrasound.

Management can be conservative or medical (methotrexate) if the patient is stable and there is no haemoperitoneum or signs of haemodynamic instability. Surgical management is indicated in cases of ruptured ectopic pregnancy, maternal haemodynamic instability or if an embryo and cardiac activity are seen on ultrasound.

Ovarian hyperstimulation syndrome (OHSS)

Ovarian hyperstimulation occurs in relation to assisted reproduction treatment, such as gonadotropins. It is a systemic condition secondary to the production of vasoactive substances. Symptoms include an acute abdominal pain and rapid abdominal distension (secondary to ascites), headache, vomiting and in some cases oliguria. Severe cases can be life-threatening and immediate senior input is required. In these cases, admission to hospital is required and management is supportive with correction of intravascular dehydration, replacement of albumin, daily weight and thromboprophylaxis.

Complication of ovarian cyst

Ovarian cysts may be found incidentally during the first trimester ultrasound. They complicate in 1 in 1000 pregnancies and these cysts are most commonly benign (Figure 1). They often present with intermittent and unilateral abdominal pain. Other symptoms include nausea, vomiting and general malaise. Ovarian torsion occurs more commonly on the right side due to the presence of the sigmoid colon on the left side that limits the space

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