

Gynaecological causes of abdominal pain

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Abstract

Women presenting with pain are likely to present to a variety of clinicians including general surgeons. This article addresses causes of abdominal pain in pregnancy such as miscarriage, ectopic pregnancy, fibroids and urinary tract infection. In the non-pregnant female, cyclical causes of pain include primary dysmenorrhoea, endometriosis and mittelschmerz; and non-cyclical causes include pelvic inflammatory disease, ovarian cyst accidents and adhesions. An ovarian cyst accident occurs when an ovarian cyst undergoes torsion, bleeds internally or ruptures. Timely diagnosis is prudent in order to avoid ovarian infarction and hence loss of ovarian tissue, especially in a young woman. Pelvic inflammatory disease is the reason for 1 in 60 visits to GPs by women under 45 years. It has long-term consequences which include chronic pelvic pain and infertility making timely management crucial. In the UK nearly 12,000 ectopic pregnancies are diagnosed annually, giving a prevalence of 1.1%. In the period 2006–8 there were six deaths resulting from ectopic pregnancy. This article gives a brief overview of the causes and treatment of abdominal pain in women presenting with a gynaecological aetiology.

Keywords Ectopic pregnancy; endometriosis; miscarriage; ovarian cyst; pelvic inflammatory disease

Introduction

This article aims to address causes of abdominal pain arising from the reproductive tract in both the pregnant and non-pregnant female. A gynaecological cause of pain is typically located in the lower abdomen or pelvis. While a plethora of differential diagnoses may be suggested when assessing pelvic pain, a systematic approach in eliciting the nature of the pain followed by specific examination findings will narrow the differential diagnosis. Investigations may then be done to confirm the diagnosis and appropriate management planned. A logical method is to differentiate acute from chronic pain and cyclical from non-cyclical pain. A menstrual history should be taken and the timing of pain in relation to the menstrual cycle elicited. For example pain due to an ovarian cyst accident is typically non-cyclical and may present acutely on a background of chronic pain. Conversely, pain due to endometriosis is typically cyclical in nature, presents pre-menstrually and lasts throughout menstruation before waning.

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Gynaecological causes of pelvic pain

Cyclical

- Primary dysmenorrhoea
- Uterine leiomyoma (fibroids)
- Endometriosis/adenomyosis
- Mittelschmerz

Non-cyclical

- Pelvic inflammatory disease
- Ovarian cyst accident
- Adhesions
- Urinary tract infection

Box 1

Symptoms associated with gynaecological causes of pain

- Dysmenorrhoea
- Mid-cycle pain associated with ovulation
- Deep dyspareunia
- Dyschezia
- Rectal bleeding
- Change in bowel habit
- Radiation down the anterior thigh (referred pain from obturator nerve irritation)
- Pain associated with nausea or vomiting
- Dysuria
- Haematuria

Box 2

Boxes 1 and 2 outline possible causes of pelvic pain and symptoms to elicit in the history.

Ovarian cyst accident

An ovarian cyst accident occurs when an ovarian cyst undergoes torsion, bleeds internally or ruptures. Timely diagnosis is prudent in order to avoid ovarian infarction and hence loss of ovarian tissue, especially in a young woman.

Cyclical changes in the ovary produce a Graafian follicle which then becomes the corpus luteum after ovulation. It produces progesterone and persists until 12 weeks of gestation in pregnancy and then shrinks as the placenta takes over the function of progesterone production. In the absence of a pregnancy, the corpus luteum undergoes senescence and if this fails, fluid can accumulate within the cavity, resulting in an ovarian cyst. Such a 'functional' cyst is often a simple cyst and often discovered incidentally on ultrasound scan. It is not uncommon for functional cysts to resolve spontaneously and they can often be seen to have resolved when an ultrasound scan is carried out at a different stage of another menstrual cycle. However, if the cyst undergoes torsion or bleeds internally or ruptures – referred to as an ovarian cyst accident – it can cause abdominal or pelvic pain.

Functional cysts are more likely to occur during child-bearing years. Clinical features include lower abdominal pain, adnexal

tenderness and a palpable ovarian mass on vaginal examination. The cyst is usually demonstrable on a pelvic ultrasound scan or MRI or CT scan. Treatment is aimed at removing the ovarian cyst while preserving as much of the viable ovarian cortex as possible. This may be done laparoscopically or via laparotomy. Preoperatively, consent must be obtained for an oophorectomy in case no viable ovarian cortex remains or in case of incidentally discovered malignancy.

Most functional ovarian cysts tend to be simple fluid-filled cysts. A dermoid cyst on the other hand, is a benign germ cell tumour that may contain structures from any of the three germ cell lines. It may contain structures like hair, teeth and skin appendages. As it contains solid components, it is more likely to undergo torsion.

Embryologically, the ovary develops from the genital ridge on the posterior abdominal wall and is closely related to the embryological origin of the kidney. Pain from an ovarian cyst accident may therefore be referred to the loin and can be mistaken for renal tract pain.

Endometriosis

Endometriosis is the presence of endometrial tissue outside the endometrial cavity, affecting women of reproductive age. Endometrial tissue is responsive to hormonal fluctuations in the menstrual cycle resulting in cyclical bleeding (menstruation). Ectopic endometrial tissue responds similarly but the bleeding is intra-abdominal. Resulting localized peritoneal inflammation causes pain and may result in adhesion formation.

Endometriotic pain typically starts pre-menstrually, peaks during menstruation and starts to wane after the period is finished. It is also typically associated with deep dyspareunia. It has a reported prevalence of 10% in the general population, 30–50% in women with infertility and more than 70% in women with chronic pelvic pain. Pregnancy rates in patients undergoing in vitro fertilization (IVF) are poorer when IVF is carried out in women with endometriosis than in women having IVF for tubal factors. Donor egg IVF cycles in women where the donor has endometriosis are less likely to be successful than if the donor does not have endometriosis. It has been suggested that infertility in endometriosis patients may be related to alterations within the oocyte, resulting in embryos with an impaired ability to implant successfully. Common sites affected are the ovaries, the pelvic side wall and the utero-sacral ligaments. However, it has been known to occur in the abdominal wall as well as perineal surgical scars. Endometriosis present in the recto-vaginal septum is associated with dyschezia.

Laparoscopy is the only diagnostic test for intraperitoneal endometriosis, offering the advantage of surgical treatment with diathermy or excision at the same time. Surgical treatment of endometriosis has been demonstrated to improve fecundity rates. Medical treatment consists of any modality that suppresses ovarian function, which include the combined oral contraceptive pill (COCP) and gonadotrophin-releasing hormone (GnRH) analogues. The disease is progressive in 50% of cases, making surgical treatment a more sensible option. Endometriosis on the ovary can result in the formation of cysts known as endometriomas. Laparoscopic cystectomy has been found to be superior to laser vaporization with a lower recurrence rate at 12 months.

Uterine leiomyomas (fibroids)

These benign tumours of the myometrium vary in prevalence with a number of factors including age, race and geographical location. Prevalence in symptom-free Scandinavian women has been reported to be as low as 7.8%, rising to 60% in African women. Symptoms include abnormal uterine bleeding, infertility and recurrent miscarriage. Fibroids may degenerate and cause pelvic pain or cause symptoms by exerting pressure on adjacent organs, commonly referred to as 'bulk' symptoms. It is generally perceived that abnormal uterine bleeding, infertility and recurrent miscarriage are caused by submucous fibroids. However, any fibroid, including intramural and subserous, may degenerate, causing pelvic pain. This may happen in pregnancy as the rate of growth of the uterus and its contained myoma outstrips its developing blood supply. Management in pregnancy is usually conservative, with analgesia and fluid rehydration. The presence of fibroids in the first trimester should be noted and followed antenatally.

Outwith pregnancy, the management of fibroids is determined by their size and location, a woman's desire for fertility or contraception. Submucous fibroids have a portion within the uterine cavity. The extent of endometrial distortion informs the feasibility of removing the fibroid hysteroscopically. Myomectomy (removal of fibroids) in women who wish to maintain fertility or hysterectomy in women whose family is complete remain the mainstay of treatment, particularly for bulk and menstrual symptoms. Management of fibroids using non-surgical methods for abnormal uterine bleeding and pelvic pain and bulk symptoms is gaining popularity. Such methods include medical treatment with ulipristal acetate, a selective progesterone receptor antagonist, uterine fibroid embolization and energy-based modalities.

Pelvic inflammatory disease (PID)

This is infection of the upper genital tract, resulting in endometritis, salpingitis or oophoritis. If complicated, it may result in abscess formation or pelvic peritonitis. PID most commonly develops in sexually active women between the ages of 15 and 24. It should, however, be suspected as a differential diagnosis in any sexually active individual. The disease is fairly common and is the reason for 1 in 60 visits to GPs by women under 45. Many more women with PID experience few or no symptoms.

Of cases of PID, 50–65% is caused by *Chlamydia trachomatis* and *Neisseria gonorrhoea* is responsible for 14% of cases. Actinomycosis and tuberculosis are other uncommon causes of PID. Risk factors include any genital tract surgery, including hysteroscopy, insertion of an intra-uterine contraceptive device (IUD) and cervical surgery.

In addition to abdominal pain, vaginal discharge and pyrexia, a typical feature of PID is cervical excitation. This sign is elicited on vaginal examination. The cervix is moved gently from one side to another. Movement causes movement of the Fallopian tubes, which, if inflamed, triggers a painful response. This sign is also a feature of an ectopic pregnancy. Adnexal tenderness in PID is bilateral (if both Fallopian tubes are present), unlike with an ectopic pregnancy, where it is usually unilateral. Any organism that causes salpingitis is unlikely to affect only one Fallopian tube selectively and hence is present bilaterally.

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