



Corpus luteum rupture mimicking acute appendicitis

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Abstract

Acute abdomen is a common presentation in women in the reproductive age. It may be caused by diverse conditions. The case below presented with classical signs and symptoms of appendicitis. Haemoperitoneum seen at laparotomy suggested a diagnosis of ectopic pregnancy. The diagnosis of ruptured corpus luteum cyst (RCLC) was made only after histology. The symptoms, signs and diagnosis of RCLC are discussed. The case highlights the need for circumspection in the diagnosis of the cause of acute abdomen. The current trend favours conservative management of RCLC thus the need for a high index of suspicion is emphasized to avoid unnecessary surgery.

Keywords: Corpus luteum, appendicitis, ectopic pregnancy.

Introduction

The corpus luteum is a temporary hormone producing structure formed from the Graafian follicle after ovulation. If fertilization occurs it becomes more vascularised, increases in size and produces progesterone which is necessary for the maintenance of the pregnancy for about three months before the placenta takes over. In the absence of fertilization it involutes becoming the corpus albicans; hormone production ceases and menstruation occurs. The corpus luteum is the most vascularized organ in the body.¹ It is thin walled and may grow to a size of 5-10cm. It is thus susceptible to rupture which causes pain due to leakage of blood into the peritoneum. The pain may be mild or severe enough to present as acute abdomen. The blood loss may vary from a few milliliters to massive haemoperitoneum. Many cases are self-limiting while those that present as acute abdomen may present a diagnostic dilemma mimicking many abnormalities within and outside the reproductive system. Hence it has been described as the 'great imitator'.^{1,2}

Case report

Mrs I. C a 31year old Para 1+0, 1 alive presented with a four day history of sudden onset of para umbilical pain which gravitated to the right iliac fossa. It was mild at the onset and responded to analgesics. However it suddenly became severe and associated with nausea and emesis just prior to presentation. Her last period was about twelve days before presentation. There was no vaginal bleeding or discharge. She was sexually active, not on any form of contraception and her past medical history was unremarkable. On examination she was obese (BMI = 40 kg/m²) not pale, afebrile, not jaundiced and had no pedal oedema. Her chest was clinically clear, pulse was 84bpm and blood pressure was 120/70 mmHg. The heart sounds were normal. There was tenderness and guarding in the lower abdomen maximal at the McBurney's point. Rovsing's and Blumberg's signs were positive. There was no clinical evidence of fluid in the abdomen. The liver, spleen and kidneys were not palpable. A diagnosis of ruptured appendicitis was made.

Investigations showed a packed cell volume (PCV) of 31%, WBC of 4.20 x 10⁹/L, urinalysis was normal and pregnancy test was negative. Trans-vaginal ultrasound scan (Figs 1 and 2) reported Ruptured acute appendicitis, normal non gravid uterus, multiple cystic masses each about 50mm in

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diameter in the right adnexa. The left adnexa was normal. There was moderate amount of fluid in the pouch of Douglas.



Fig 1

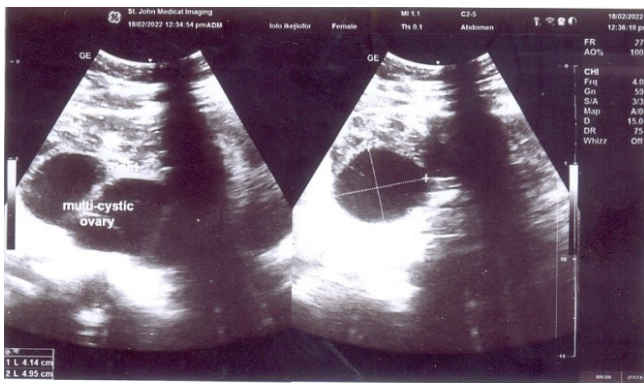


Fig 2

The peritoneal cavity was accessed through a grid iron incision which was later extended medially. It revealed a normal appendix, a right adnexal mass and haemoperitoneum of about 1,500mls, mostly consisting of clotted blood. No active bleeding was evident. An appendectomy was done and the adnexal mass was excised. Blood clots were removed and the abdomen was closed after peritoneal lavage. The patient was transfused with a unit of blood immediately after the operation. She also received antibiotics and analgesics. The PCV was 31% on the second post-operative day and she was discharged after five days. The histology reported Corpus Haemorrhagicum and a normal appendix.

Discussion

The case is that of ruptured corpus luteum initially diagnosed as ruptured acute appendicitis.

The prevalence of Ruptured corpus luteum cyst (RCLC) is unknown as many cases are self-limiting and do not attain clinical significance. Those that do, present as acute abdomen of varying severity and with no distinguishing signs and symptoms. The resulting haemoperitoneum may be massive and life threatening.⁴ The differential diagnosis is extensive and includes ectopic pregnancy, appendicitis, ovarian torsion, neoplasm and biliary colic. Others are acute pelvic inflammatory disease, endometriotic cysts rupture, cystitis and gastroenteritis.^{5,6} It may present at any time from menarche to menopause being more frequent in pregnancy and in those with blood dyscrasias or on anticoagulant treatment.⁷⁻⁹ Some cases have been associated with the use of fertility drugs, leukaemia and sickle cell disease.¹⁰⁻¹² Outside pregnancy the symptoms may range from mild to severe with cardiovascular shock and tend to start in the luteal phase of the cycle. The most common age of presentation is 25-34 years.¹⁰ Trauma from intercourse, exercise or vaginal examination are triggers for the onset of symptoms.¹³ The condition shows a bias for the right side as in this case and various reasons have been adduced for this. These include the protective effect of the recto sigmoid colon,⁷ anatomical factors which lead to increase in venous pressure in the right ovary,¹⁴ and the presence of the appendix on the right side which leads to more frequent exploration for right sided lower abdominal pain.¹⁵ The frequently quoted dextro preponderance may also be due to the fact that the right ovary is much more active than the left being responsible for 55% of all ovulations in the reproductive life.¹⁶ Lee et al¹⁷ however found no difference in incidence between the two sides. Diagnosis of RCLC could be difficult because of its ability to mimic many conditions. Only about forty percent of cases are correctly diagnosed before surgery¹⁸ hence the importance of high index of suspicion. It is most often confused with ectopic pregnancy and may also be confused with appendicitis⁷ as in this case. Very rarely it may occur concomitantly with each of the two conditions.^{19,20} Ultrasound evaluation is the investigation of choice in acute abdomen because it is cheap, widely available and does not pose any radiation hazard. It also assesses severity by quantifying the haemoperitoneum. Differentiating RCLC from

ectopic pregnancy which is its major differential diagnosis could be challenging as it has no specific distinguishing features on ultrasound. Ultrasound findings have to be combined with pregnancy test and Human Chorionic Gonadotropin assay results to achieve increased diagnostic accuracy. The most reliable sign is the position of the lesion relative to the ovary.²¹ In RCLC the lesion is in the ovary while in ectopic pregnancy it is extra ovarian (in the fallopian tube). It may not always be possible to determine this so the presence of the 'tubal ring sign' which is highly sensitive and which has a positive predictive value of 95% for ectopic pregnancy would be useful.¹⁷ However both conditions may sometimes occur concomitantly.²² When ultrasound fails to reach a definite diagnosis recourse is made to computerized tomography (CT) or magnetic resonance imaging (MRI).¹⁸ It is very important to make a diagnosis because eighty per cent of cases could be managed conservatively thus avoiding surgery.²³

For purpose of management RCLC can be divided into complicated and non-complicated cases. The former are those without signs like massive haemoperitoneum, severe pain, fever, leucocytosis or cardiovascular collapse. The current trend favours conservative management²⁴ in uncomplicated cases. They can be managed with a 'WAIT and SEE' policy with observation, serial blood studies and ultrasound scans. Anti fibrinolytic agents like Tranexamic acid may be given to reduce bleeding.^{18,23} Complicated or severe cases should be managed with laparoscopy or laparotomy with the former being preferred especially where neoplasm is suspected.¹⁸ Treatment is individualized and at surgery the least traumatic procedure to arrest bleeding is the treatment of choice in order to preserve ovarian function. These have in the past included electro-cautery, luteotomy, oophorectomy, unilateral salpingectomy, hysterectomy and bilateral salpingo-oophorectomy. Prognosis is good and complications rare, although a case of premature menopause has been reported following treatment by electric coagulation.²⁵ Recurrence though uncommon may occur in those with blood dyscrasias. They are prevented by the use of oral contraceptive pills, progestogens and GNRH analogues.^{10,26}

Conclusion

Ruptured corpus luteum haemorrhage is a major cause of gynaecological haemoperitoneum and presentation is often as acute abdomen. Diagnosis may be difficult as it may mimic many conditions and more than half of the cases are missed. A high index of suspicion needs to be maintained as prompt diagnosis will allow conservative management which is currently preferred in suitable cases thus avoiding unnecessary operations.

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