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CASE REPORT

Can I Be Pregnant? – Diagnostic Challenges in Ruptured Chronic Ectopic Pregnancy

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ABSTRAK

Kehamilan ektopik adalah kecemasan kebidanan yang menyumbang kepada 4% daripada semua kematian yang berkaitan dengan kehamilan. Semua wanita dalam usia reproduktif dengan sakit perut atau pendarahan faraj yang hadir ke Jabatan Kecemasan harus dinilai untuk kehamilan ektopik. Walau bagaimanapun, terdapat banyak diagnostik kehamilan ektopik yang mencabarkan. Salah satu varian kehamilan ektopik yang jarang dapat diabaikan adalah kehamilan ektopik kronik. Seorang wanita berusia 39 tahun hadir dengan sakit perut akut dan pendarahan dalaman. Ujian air kencing dan darah untuk kehamilan menunjukkan keputusan negatif, namun penemuan intraoperatif mengesahkan kehamilan di tubul kiri. Kami ingin mengetengahkan tiga cabaran diagnostik utama yang kami hadapi dalam kes ini iaitu; (i) wanita dalam usia reproduktif dengan sakit perut, harus sentiasa dinilai untuk kehamilan ektopik; (ii) diagnosis kehamilan ektopik tidak boleh diketepikan walaupun ujian kehamilan yang negatif; dan (iii) peranan imbasan tomografi komputer (CT) apabila etiologi tidak jelas. Secara amnya, semua abdomen akut yang tidak stabil secara hemodinamik harus dihantar ke dewan bedah. Pesakit yang stabil secara hemodinamik harus dinilai dengan teliti untuk memudahkan pengurusan pembedahan.

Kata kunci: kandungan ektopik, kecemasan, kronik, perut akut, ujian kehamilan air kencing

ABSTRACT

Ectopic pregnancy is an obstetric emergency which accounts for 4% of all pregnancy-related deaths. All women of child bearing age with abdominal pain or vaginal bleeding presenting to the Emergency Department should be evaluated for

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ectopic pregnancy. However, there have been many reported cases of diagnostic challenges of ectopic pregnancy. One rare variant of ectopic pregnancy that can be easily overlooked is chronic ectopic pregnancy. We present this case of a 39-year-old female, who presented with acute abdomen and free fluid in her abdomen. Urine pregnancy test indicated she was not pregnant. However, intraoperative findings confirmed left tubular pregnancy. We would like to highlight three major diagnostic challenges we faced in this case i.e.; (i) women of child bearing age with abdominal pain should always be evaluated for ectopic pregnancy; (ii) diagnosis of ectopic pregnancy should not be dismissed even though the pregnancy test is negative; and (iii) the role of computed tomography (CT) scan in acute abdomen of unclear aetiology. As a rule, all haemodynamically unstable acute abdomen should be sent to the operation theatre. Haemodynamically stable patients should be carefully evaluated to facilitate surgical management.

Keywords: acute abdomen, chronic, ectopic pregnancy, emergencies, urine pregnancy test

INTRODUCTION

Ectopic pregnancy is an obstetric emergency which accounts for 4% of all pregnancy-related deaths (Creanga et. al 2011). There have been many reported cases of diagnostic challenges of ectopic pregnancy. As the emergency team, it is hypercritical to not miss or overlook the diagnosis as it can lead to life-threatening haemorrhage and death. Ectopic pregnancy can be classified into several variants. Ruptured versus non-ruptured which is easily identifiable based on ultrasonography evidence of free fluid with peritonism signs and haemodynamic instability (Tulandi 2020). It can also be diagnosed as acute and chronic ectopic pregnancy. Acute presentation is described as a more classical presentation and easily identifiable with high Beta human chorionic gonadotropin (ß-hCG) levels, and rapid growth with higher chances of tubal rupture. Chronic ectopic on the other hand, is described as low to absent ß-hCG and a prolonged clinical course with a low chance of rupture (Barnhart et al. 2003). It occurs when trophoblastic tissue invades the implanted structure causing repeated ruptures and formation of a haematocele. This subsequently leads to inflammation and chronic pelvic adhesions overtime (O'Neill et al. 2018).

Women of child-bearing age presenting to the Emergency Department (ED) with abdominal pain must always be evaluated for ectopic pregnancy. A seemingly normal gynaecological history should not mask the possibility of pregnancy in any woman, and indeed biological variation and irregular menstruation are factors that should be considered. A negative pregnancy test is not reliable

to rule out pregnancy. There are many causes of a false negative pregnancy test, as the one highlighted in this case of chronic ectopic pregnancy. Any woman presenting with an acute abdomen has to be immediately assessed to determine the pathology. If in doubt, computed tomography (CT) scan can be used in an emergency setting in haemodynamically stable patients (Liu et al. 2018).

In a busy ED, it is easy to overlook certain diagnosis without complete information. It is crucial to always consider ectopic pregnancy despite a negative pregnancy test in a fertile woman presenting with an acute abdomen and resuscitate them accordingly.

CASE REPORT

This is a case report of a 39-year-old Indonesian female, who was previously well, had two living children (one spontaneous vertex delivery and one caesarean section for foetal distress) and two complete miscarriages. Her last menstrual cycle was two weeks ago, regular cycle. She presented to the ED with sudden onset of left abdominal pain one hour post-coitus. The pain was described as continuous, pricking in nature and radiating all over the abdomen. She also complained of dysuria and cloudy urine for the past one week. She denied any COVID-19 contact, fever, gastrointestinal, respiratory or neurological symptoms. There was no history of recent trauma.

On arrival, physical examination revealed an obese woman with mild pallor, no jaundice, and not septic looking. Her airway was clear as she was speaking in full sentences and saturating well under room air. Both radial pulses were weak, capillary refill time was below two seconds and her peripheries were cold. Her blood pressure was 81/45, with initial response to fluid resuscitation and subsequently remained stable with mean arterial pressure above 65 mmHg. Her pulse rate on arrival ranged between 100-110 beats/minute. She was afebrile. Abdominal examination revealed a distended abdomen with generalised tenderness and guarding, with sluggish bowel sounds on auscultation. She did not show any signs of heart failure, liver failure or fluid overload. There were no bruises or rashes over her body. Vaginal examination revealed a normal cervix, with no discharge or per vaginal bleeding, no cervical excitation nor any palpable adnexal mass, with a normal pouch of Douglas. Her mental status remained normal during the examination.

Urine pregnancy test was negative and transabdominal ultrasound scan revealed free fluid over the hepato-renal, spleno-renal and retro-uterine regions. Uterus appeared empty with no gestational sac, nor any obvious adnexal mass or cyst. Initial full blood count showed raised white blood cells (WBC) of 23.9 x 10^9/L, haemoglobin 10.2 g/dL, haematocrit 30.2% and platelet 447 x 10^9/L. Her liver and kidney function tests were within normal range. Serum amylase was 36 U/L and C-reactive protein was 0.45 mg/dl. The surgical and gynaecological teams were alerted with a preliminary diagnosis of acute

Figure 1: Free fluid noted in the pelvis, perihepatic region, perisplenic region and along the para-colic gutter.

Figure 2: Uterus is anteverted. Cervix is not bulky. There is suggestion of left adnexal cystic lesion measuring 2.5 cm with enhancing wall (red arrow).

abdomen for investigation, with differential diagnoses of perforated viscus or gynaecological pathology in hypovolemic shock. Serum ß-hCG was 2.9 mIU/mL, which biochemically ruled out pregnancy according to our laboratory standard (<5 mIU/mL). The surgical team assessment noted no air under the diaphragm on erect chest x-ray and normal abdominal x-ray. Urinalysis detected the presence of leucocytes, ketone and protein, while being negative for nitrates. Decision was made to proceed with CT of the abdomen to look for the source of the free fluid. The patient remained in class II haemorrhagic shock prior to imaging.

CT of the abdomen revealed free fluid in the pelvis, peri-hepatic region, peri-splenic region and along the para-colic gutter (Figure 1). There was also bowel inter-loop free fluid. Uterus was anteverted and the cervix was not bulky. There was suggestion of left adnexal cystic lesion measuring 2.5 cm with enhancing wall (Figure 2). The free fluid in the pelvis showed two densities; 73HU (central) and 36HU (periphery) (Figure 3). Reversed liver-spleen attenuation was suggestive of fatty liver. A repeated transabdominal ultrasound by the attending Obstetrics & Gynaecology specialist revealed a complex adnexal mass measuring 2x2 cm, with organised clots surrounding, which may suggest a ruptured tubal

Figure 3: The free fluid in the pelvis shows two densities: 73 HU (central) and 36 HU (periphery), respectively

pregnancy. The uterus was empty with endometrial thickness (ET) 9.7 mm. A preliminary diagnosis of ruptured ectopic pregnancy was considered and the patient was sent to the operation theatre for an emergency laparotomy, proceeded by the gynaecological team.

Intraoperative findings by the gynaecological team concluded a ruptured left tubal pregnancy. Haemoperitoneum of 1.5 L was discovered. Both ovaries and the right tube were normal, with no evidence of endometriosis or pelvic inflammatory disease. Uterus was 6 weeks in size. She was transfused with 2 units of packed cells. Her haemoglobin dropped from 10.2 g/dL on admission to 8.5 g/dL prior to surgery, and improved to 9.1 g/dL upon discharge. Histopathological examination confirmed the left fallopian tubal pregnancy. Microscopic section showed a tubular structure composed of fibromuscular wall with lumen lined by pseudostratified columnar epithelium. There were chorionic villi present within the lumen with some embedded within the tubal wall. Focal areas of haemorrhage were noted. The patient was discharged on day three post-operatively. She was haemodynamically stable with no anaemic symptoms and was pain free. She was advised follow-up for wound inspection, routine thromboprophylaxis and adequate haematinics.

DISCUSSION

Ectopic pregnancy is a well-known obstetric emergency in the ED. It is described as a pregnancy developing outside the endometrium of the uterine cavity (Tulandi 2020). About 96% of all ectopic pregnancy occurs in the fallopian tube. Although ectopic pregnancy comprises about 0.5-1% of all pregnancies, mortality and morbidity are high when diagnosis or treatment is delayed (Mohamad et al. 2021). Bleeding from ruptured ectopic pregnancies contributes 4% of maternal mortality. Some of the common risk factors for ectopic pregnancy are abnormal tubal anatomy, previous ectopic pregnancy, pelvic inflammatory disease, infertility, in vitro fertilisation, tubal reconstruction surgery, increasing age and smoking (Bouyer et al. 2003; Murray et al. 2005). All women of childbearing age with abdominal pain or vaginal bleeding presenting to the ED should be evaluated for ectopic pregnancy. A serum or urine human chorionic gonadotropin (HCG) and ultrasonography can help establish diagnosis.

We would like to highlight this case of ruptured chronic ectopic pregnancy, which presented with certain diagnostic challenges in its unusual presentation i.e. (i) Women of child bearing age with abdominal pain, should always be evaluated for ectopic pregnancy; (ii) Diagnosis of ectopic pregnancy should not be dismissed when the pregnancy test is negative; and (iii) CT scan does play an important role in acute abdomen of unclear aetiology.

Pregnancy is diagnosed based on period of amenorrhea beyond expected cycle, positive HCG and

ultrasound findings. However, due to biological variation or women with irregular menses it might be difficult to estimate period of amenorrhea (Bastian & Brown 2020). To complicate matters, 9% of early pregnancy may present with light bleeding up to 8 weeks which can be mistaken as menstrual bleeding (Harville et al. 2003). Abdominal pain and abdominal tenderness are the two most common presentation in ectopic pregnancy, 97% and 91%, respectively. Other symptoms include vaginal bleeding (79%) and adnexal tenderness (54%) (Tay et al. 2000). As noted in this case, the diagnosis of ectopic pregnancy was overlooked in view that the period of amenorrhea was absent even though she was sexually active, while possessing risk factors and classical symptoms.

Pregnancy can be confirmed with urine or serum, with the latter being more accurate in detection of ß-hCG. Serum ß-hCG is detectable on day-14 of menstrual cycle compared to urine, which is usually positive by day-16. However, we have to be mindful of the possibility of false negative and special circumstances as shown in this case. Common causes are premature testing after ovulation, expired test kit or difference in ß-hCG isoforms. The hook effect, caused by extremely high levels of ß-hCG can also produce false negative results which is commonly associated with gestational trophoblastic neoplasia (Bastian & Brown 2020). Chronic ectopic pregnancy on the other hand, has been documented to produce low to negative ß-hCG results, creating a negative pregnancy test. There are four theories to explain i.e. (i) Trophoblast degeneration; (ii) Abnormal implantation of trophoblastic tissue in a small volume; (iii) Defective ß-hCG secreted by ectopic trophoblasts; and (iv) Rapid clearance of defective ß-hCG from maternal serum (Maccato et al. 1993).

Negative ß-hCG in a busy ED can definitely give a false sense of security. Therefore, we should be more vigilant and not eliminate ectopic pregnancy as part of our differential for women of reproductive age presenting with acute abdominal pain.

Sonography is the principal tool to diagnose ectopic pregnancy. Transvaginal ultrasound, compared to transabdominal is more accurate in detection of early pregnancy. Free fluid and adnexal mass can be visualised with a bedside sonography. Any suspicion of ectopic should prompt urgent treatment without further imaging or delay. Any unstable patient must be sent to the operation theatre for urgent exploratory laparotomy. However, in haemodynamically stable patients, diagnosis can be achieved using other imaging modalities. Magnetic resonance imaging (MRI) has often been performed as an adjunct to ultrasound to visualise soft tissue and more specific characteristics of tissues and fluids. In an acute setting, CT is more readily available and can be used to diagnose the source of bleeding (Kao et al. 2014). However, to date there have been a limited number of reported cases of negative urine pregnancy test with positive CT findings of ectopic pregnancy. A study performed to differentiate ruptured

ovarian corpus luteal cyst versus ruptured ectopic pregnancy using CT noted its invaluableness as there are many overlapping characteristics (Liu et al. 2018). Our initial differentials for this patient included perforated viscus, including the appendix or a gynaecological pathologies. The radiological impression of ruptured corpus luteal cyst was considered based on the left adnexal cystic lesion. Ectopic pregnancy was confirmed intra-operatively.

When in doubt, imaging can definitely help rule in or out many differential diagnoses. We should combine imaging tools with physical examination and other investigations to guide our management.

CONCLUSION

Chronic ectopic pregnancy, although rare and seldom presents in acute settings, is still a life-threatening gynaecological emergency. We highlight this case to create more awareness of this condition, which is a diagnostic challenge. Any woman of childbearing age must always have ectopic pregnancy as part of the list of differentials, even if the ß-hCG levels are low or absent. A complete menstrual, obstetric and gynaecological history may aid to stratify patients at risk of ectopic pregnancy. Emergency staff should activate a multidiscipline approach in dealing with acute abdomen in women. Alternative imaging modalities should only be considered if the patient is hemodynamically stable to facilitate surgical management. Unstable patients should be immediately directed to the operation theatre for definitive care.

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