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COMMUNICATION

Laparoscopic removal of a large 8-cm ectopic pregnancy with a negative pregnancy test

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Abstract Ectopic pregnancy has been increasing in frequency over the past years. The first step in the diagnosis of ectopic pregnancy is the demonstration of pregnancy by performing a sensitive qualitative urine test; hence, a negative urine pregnancy test will generally exclude ectopic pregnancy from the differential diagnosis. The following is a report of a patient presenting with abnormal vaginal bleeding for 8 weeks with a negative urine pregnancy test and transvaginal scan suggesting a large 8-cm ectopic pregnancy. This case report demonstrates the importance of keeping the diagnosis of ectopic pregnancy in our mind even with negative urine pregnancy but with atypical presentation and how such large ectopic pregnancies can still be managed laparoscopically.

Keywords Ectopic pregnancy · Laparoscopic salpingectomy · Negative pregnancy test

Introduction

Ectopic pregnancy is a major cause of maternal mortality, being a direct cause of ten maternal deaths in the seventh report of The Confidential Enquiry into Maternal and Child Health (CEMACH) in the United Kingdom: Saving Mothers' Lives, 2003–2005 [1].

Most ectopic pregnancies follow a smooth clinical course, which allows a more conservative approach to management. However, ectopic pregnancy remains a dangerous situation that can lead to death if there is delay in diagnosis. The incidence of ectopic pregnancy is increasing; however, one major concern is the difficulty encountered in diagnosing ectopic pregnancy especially in view of the atypical clinical presentation.

The submission of this case report emphasises on potential difficulties in the diagnosis and management of ectopic pregnancy and highlights the importance of thorough history and physical examination and subsequent investigation such as serum β-subunit of human chorionic gonadotropin (βhCG) and ultrasonography. It also illustrates how even large ectopic pregnancies can be managed laparoscopically using tissue morcellation.

Case report

A 24-year-old woman, who had two normal deliveries, presented to the early pregnancy unit with an 8-week history of continuous abnormal vaginal bleeding. The initial assessment showed a clinically and haemodynamically stable woman with mild suprapubic and left iliac fossa tenderness. Pelvic examination revealed bulky anteverted uterus with left adnexal mass and left adnexal tenderness. Her early morning urine pregnancy test was negative. She was booked for a transvaginal ultrasound scan to rule out any ovarian pathology. The scan showed an anteverted uterus with regular endometrium measuring 5 mm. Within the left adnexa and adjacent to the left ovary, there was a complex mass that resembled a gestational sac; within it, there was a 15-mm foetal pole equal to 8 weeks gestation (Fig. 1). No foetal heart beat was seen. A small amount of free fluid was seen in the left adnexa. Appearances suggested a left-sided ectopic pregnancy of 8 cm. The

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Fig. 1 Ultrasound findings of the ectopic pregnancy

urine pregnancy test repeated twice with different kits, and it was still negative; however, her serum βhCG was 51 IU/l. She was taken to theatre for laparoscopy. In view of her previous midline scar because of appendectomy, the primary port was inserted through Palmer's point. An 8-cm left tubal pregnancy was found adherent to the bladder and omentum. With careful dissection of the extensive adhesions, the tubal pregnancy was removed and morcellated into three pieces and removed through a 10-mm port using a reusable retrieval bag. The woman had smooth postoperative course and was discharged home after 48 h. The histopathology report confirmed a tubal ectopic pregnancy measuring 7 cm with much tissue necrosis and haemorrhage.

Discussion

The incidence of ectopic pregnancy is increasing [2]; moreover, 50% of these pregnancies are missed at time of first GP visit and 36% at first emergency department visit [3].

Also, ectopic pregnancies are sometimes difficult to diagnose purely on clinical background, and a negative pregnancy test makes things more complicated.

Therefore, in order to reduce the morbidity and mortality from ectopic pregnancy, we should maintain a high index of suspicion of diagnosis even with a negative pregnancy test.

Negative urine and serum βhCG tests were reported among 3.1% and 2.6% of ectopic pregnancies, respectively [4]. Moreover, Aboude and Chaliha [5] reported 8% false-negative urinary pregnancy test in patients who subsequently required surgery.

The trophoblastic cells produce βhCG; this production increases after implantation. Human chorionic gonadotropin provides the basis for all pregnancy tests, including home test kits. One problem is the detection limit of the test. The reported detection limits of βhCG range from 10 to 50 mIU/ml, with most kits between 25 and 50 mIU/ml [6]. In a community-based prospective cohort study, using an extremely sensitive assay for βhCG, 10% of clinical pregnancies were undetectable on the first day of missed menses [7].

Furthermore, Chard revealed that an assay with a detection limit of 25 mIU/ml will begin to detect pregnancy around 3 or 4 days after implantation [8].

Ectopic pregnancy with negative pregnancy test may represent a particular form of chronic ectopic pregnancy; and in the literature, many cases of ruptured tubal ectopic pregnancy associated with negative urine or serum βhCG have been reported [9–13].

Moreover, rupture of ectopic pregnancy has been reported after the disappearance of serum βhCG [14–16]. Hence, it was suggested that low and falling serum βhCG levels do not rule out the possibility or resolution of ectopic pregnancy and tubal rupture can still occur.

Mechanisms of negative pregnancy test

Different theoretical mechanisms have been speculated as explanation for negative pregnancy test:

1. Deficient production of this hormone by a viable and active trophoblastic tissue [17]
2. Persistence of a very small mass of active trophoblastic tissue producing little βhCG responsible of a non-detectable serum level (even with the modern tests) [17]
3. Enhanced clearance from serum of nascent hormone (unknown process) [17]
4. Involution of active trophoblastic ectopic tissue leading to a negative βhCG level; yet tubal hematomas can persist, grow, and rupture [14]

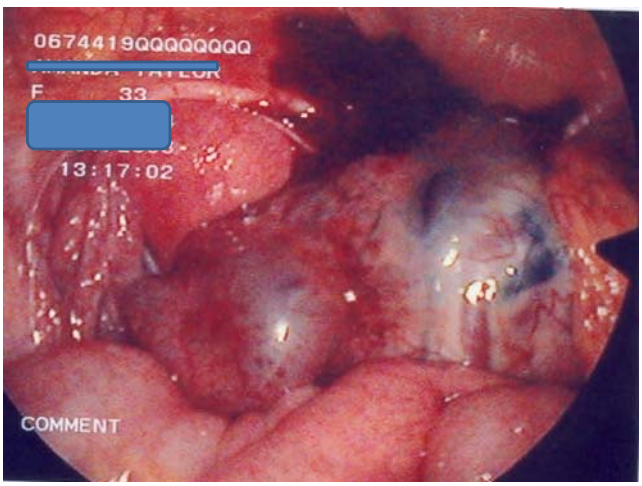

Fig. 2 Laparoscopic findings of the ectopic pregnancy

5. Implantation can occur surprisingly late in relation to a woman's expected menses. This represents a limitation of βhCG-based pregnancy testing on the first day of the missed period [7].

Outcomes

Three possible outcomes have been reported among patients with chronic ectopic pregnancy with negative βhCG: [10, 13–14, 18]

- Spontaneous recovery with resolution of the symptoms
- Persistent minor signs with sonographic pelvic abnormal findings justifying surgical exploration
- An acute rupture and a surgical treatment is required immediately

Key messages

The following can be drawn out from the study:

- Ectopic pregnancy is a serious cause of maternal morbidity and mortality; hence, it is important to maintain a high index of suspicion of its diagnosis even with negative pregnancy test and take a thorough history and perform a comprehensive clinical examination supported by proper investigations especially in atypical presentation.
- Ectopic pregnancy larger than the uterus (Figs. 1 and 2) can still be successfully managed laparoscopically by using tissue morcellation, with careful tissue retrieval in a reuseable bag.

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