CASE REPORT

Case of hepatic flexure ectopic pregnancy medically managed with methotrexate

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SUMMARY

Abdominal pregnancies represent 1.4% of extrauterine pregnancies. A literature search of six cases involving bowel ectopic pregnancies provided anecdotal treatment options. This case involves a woman admitted at 6 weeks gestation with right iliac fossa and shoulder tip pain. An ultrasound scan revealed an empty uterus with free fluid in both adnexa and a 31×21 mm heterogenous mass adjacent to the right ovary. At laparoscopy, an ectopic pregnancy was identified at the hepatic flexure. The patient received two doses of methotrexate and monitored until the beta human chorionic gonadotropin reduced. The decision to manage with methotrexate was balanced against reported cases of bowel perforation and the possibility that a section of bowel may need removal if the pregnancy showed signs of invasion. Maternal mortality rate with abdominal pregnancy is 20% due to the risk of massive haemorrhage from placental separation or invasion of bowel vasculature. Medical treatment here was successful and avoided extensive surgery.

BACKGROUND

An ectopic pregnancy occurs when the pregnancy is located outside of the uterus. The majority of these (98%) are tubal and the remainder are ovarian, cervical or abdominal.¹ Ectopic pregnancy is one of the leading causes of maternal deaths worldwide.² Abdominal ectopic pregnancy is a rare and dangerous form of extrauterine pregnancy affecting 1 per 10 000 pregnancies worldwide.³ Abdominal ectopic pregnancies occur when the gestation sac implants away at a site other than the uterus, fallopian tubes or ovaries. The pregnancy may implant in the small or large bowel, liver, spleen, mesentery or bladder. Classification of abdominal ectopic pregnancy was first coined in 1942 following a reported case of a peritoneal pregnancy. Studdiford's criterion classifies abdominal pregnancy as either primary or secondary.⁴ A primary abdominal pregnancy is confirmed when the fallopian tubes and ovaries are normal, there is no evidence of uteroplacental fistula. Also, when an embryo exclusively attaches to the peritoneal surface at an early gestation, this eliminates the possibility of a secondary implantation and is classified as a primary abdominal pregnancy.⁵ Secondary abdominal pregnancy occurs when the embryo implants and grows in the abdominal cavity following expulsion or rupture from its primary implantation site (such as a ruptured tubal pregnancy).⁵ There

is a difference seen in the incidence of abdominal ectopic pregnancies in the developed world (0.13 per 1000; 0.013%)¹ compared with low-income and middle-income countries (0.34 per 1000; 0.034%).⁶ This is thought to be due to the higher incidence of pelvic inflammatory disease in countries with poor healthcare and resources.⁷ Pelvic inflammatory disease is a known contributor to all forms of ectopic pregnancy and is thought to affect up to 40% of sexually active women in the developing world.⁸ Maternal mortality rates related to all ectopic pregnancies are increased in the developing world due to poor access to healthcare and lack of early pregnancy ultrasound scanning.

Early pregnancy ultrasound is usually the diagnostic tool of choice in diagnosing abdominal ectopic pregnancies.² Identification of an abdominal ectopic at an earlier gestation has reduced the maternal mortality rate from 20% to 5% in recent years worldwide.⁹ The mortality rate remains high due to the risk of massive haemorrhage related to partial or complete placental separation.¹ Placental detachment can occur at any gestation; however, from the literature, this seems to be more related to placental localisation rather than gestation.³ However, if abdominal pregnancy is diagnosed at less than 20 weeks, the patient should be counselled against continuing the pregnancy.¹⁰ One systematic review demonstrated that if the placental site is hepatic or splenic then these are associated with increased blood loss.¹¹

Transvaginal ultrasound scanning (TVUS) is the gold standard investigation in the diagnosis of an abdominal pregnancy.¹² TVUS allows clear views of the pelvic organs and can detect a pregnancy at 5–6 weeks' gestation.¹³ In many cases, MRI has been found particularly helpful in localising an abdominal pregnancy. MRI also provides information regarding the embryos attachments to any particular organ. This provides the surgeon valuable detail in order to plan appropriately when taking such a case to theatre.¹⁴

CASE PRESENTATION

A 26-year-old woman (G⁴P²) presented to the emergency department (ED) with a 24-hour history of right iliac fossa pain radiating bilaterally to the shoulder tips. The patient's last menstrual period was 6 weeks previously, and she had a positive urinary pregnancy test. This was confirmed at admission with a serum beta human chorionic gonadotropin (βHCG) of 1647 IU/mL. Previously, she had two term caesarean sections and a termination of

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Figure 1 Normal left fallopian tube, ovary and retroverted uterus during laparoscopy.

pregnancy. On examination, the patient had a mildly tachycardia (101 beats/min) and abdominal tenderness during palpation of the right iliac fossa. After gynaecology review, she was admitted as an inpatient.

INVESTIGATIONS

TVUS was performed the following day, which demonstrated an empty uterus, no intrauterine gestation sac and a fluid filled area of 7 mm within the uterine cavity. There was also a heterogenous mass 31×21 mm adjacent to and/or continuous with the right

Figure 2 Normal right fallopian tube, ovary and retroverted uterus during laparoscopy.

Figure 3 Ectopic pregnancy mass and clotted blood at the hepatic flexure seen during laparoscopy, high resolution.

ovary. There was also a moderate amount of free fluid in both adnexae.

TREATMENT

The patient was listed for diagnostic laparoscopy, plus or minus a salpingectomy, or a salpingo-oophorectomy and she was taken to theatre the same day. At laparoscopy, a 500 mL haemoperitoneum was identified, both fallopian tubes and ovaries appeared normal (figures 1 and 2). On further inspection of the abdominal cavity, a hepatic flexure ectopic pregnancy was identified

Figure 4 Ectopic pregnancy and bleeding at the hepatic flexure seen during laparoscopy, low resolution.

(figure 3). The surgical team were called for urgent review, while the patient was still under general anaesthetic. There was no active bleeding identified (figures 3 and 4) and the decision was made to perform a pelvic washout with no further surgical intervention. The following day, serum β HCG had reduced to 872 IU/mL. The patient received counselling regarding the findings at laparoscopy and management of the hepatic flexure ectopic. Consent was obtained for intramuscular methotrexate (1 mg/kg) and an initial dose of 65 mg was administered. After further counselling, the patient was discharged home with advice and a follow-up appointment in 4 days.

OUTCOME AND FOLLOW-UP

On day 4, serum β HCG was 993 IU/mL but by day 7, post-methotrexate administration, serum β HCG was found to have increased to 1855 IU/mL. The decision was made to give a further dose of intramuscular methotrexate. The patient was subsequently followed-up on days 14, 21 and 28, postinitial treatment with methotrexate. On day 28, serum β HCG had reduced to 13 IU/mL and the patient was discharged back to her general practitioner (GP).

DISCUSSION

There is minimal literature outlining the management of abdominal ectopic pregnancy. The diagnosis alone presents several challenges to medical staff. There are documented cases of abdominal ectopic pregnancies not being identified during diagnostic laparoscopy.¹³ MRI scan was required in these cases to identify the site of the ongoing pregnancy with a rising serum β HCG.

MRI scanning is considered to be the next appropriate investigation in cases where the serum β HCG continues to rise in the absence of a confirmed intrauterine or tubal pregnancy at TVUS, coupled with no pregnancy being identified at diagnostic laparoscopy. This has been recommended in stable patients where placental localisation and identification of anatomical planes will aid surgical intervention.³ This may be particularly important when locating the pregnancy at repeat laparoscopy and potentially avoid the need for a laparotomy. It would also ensure that appropriate support is in place from differing specialties prior to taking the patient to theatre. MRI scanning could be more readily utilised and considered in these cases and careful consideration to departmental protocols would have to be addressed. It is thought that MRI scanning would have to be authorised by a consultant in order for this investigation not to be used inappropriately. The majority of abdominal pregnancies are treated surgically using laparoscopic or open techniques at laparotomy. A systematic review of 225 abdominal pregnancies all at less than 20 weeks gestation revealed that 87% were treated surgically with an average estimated blood loss of 1450 mL.¹¹ The remainder was treated with methotrexate, intracardiac potassium chloride and internal iliac or lumbar artery embolisation.¹¹ The majority of surgical techniques involve attempting to dissect the placental tissue away from the bowel.³ In this case, a discussion took place between the gynaecology team and the general surgeons regarding the risks involved with surgical management while the patient was under general anaesthetic. Risks such as potential small and large bowel perforations, haemorrhage and the need for a colostomy were discussed. These risks were balanced against the risks of haemorrhage and rupture of the abdominal ectopic if managed medically. In 2004, a case of abdominal ectopic pregnancy was reported in a woman who presented with a massive gastrointestinal haemorrhage as a result

of the pregnancy invading and perforating through the sigmoid colon.¹⁵ Unfortunately, this proved to be fatal. In our case, as the patient's observations were stable and haemostasis was achieved, a decision was made to treat the ectopic medically and she was given methotrexate intramuscularly prior to discharge. The use of methotrexate in treating abdominal ectopic pregnancy is sparsely reported. A systematic review demonstrated that methotrexate was used in eight out of 225 patients either primarily or as an adjunct to surgery. Primary methotrexate alone was successful in six cases.¹⁴ The literature does include cases where methotrexate is directly injected into the gestation sac and this is thought to be successful.¹⁶ In our case, initially the serum β HCG rose after the first dose of methotrexate and so the decision was made for administration of a second dose. Following this, the serum β HCG declined and after a total of 28 days follow-up, it had reduced sufficiently to discharge the woman back to the care of the GP. This highlights the importance of follow-up at regular intervals and senior input in managing these patients. In this case, the successful use of methotrexate prevented the patient from requiring a laparotomy with the potential of bowel damage. This case was successfully managed in an outpatient setting with counselling and senior input at each attendance. It was essential to give the patient comprehensive advice regarding signs and symptoms of ruptured ectopic, along with when it was appropriate to attend the ED. It is also important that the patient is willing to comply with follow-up and the resources to accommodate this are in situ. In addition, it is vital to ensure that the patient is counselled appropriately about the side effects of methotrexate use including neutropaenia and impaired liver function. In addition, the patient must also be warned against a further pregnancy within 3 months of the methotrexate administration.

Learning points

- Ensure thorough views of the abdomen are obtained at laparoscopy to avoid missing an unusual implantation site.
- Use of MRI should be considered in complex cases of rising beta human chorionic gonadotropin with no intrauterine pregnancy diagnosed on laparoscopy. This may help to identify and plan treatment of abdominal ectopic pregnancies.
- Involvement of the multidisciplinary team in difficult and rare cases.
- Use of systemic medical treatments when surgical intervention carries high risks of morbidity.

Contributors The patient in the case was under the care of AJW when she was admitted to hospital. AJW performed the laparoscopy and formulated the management plan. AMS was informed about the case as a point of interest. CET wrote several drafts of the case report which were edited by AMS. Feedback was given and further drafts rewritten. AMS supervised and supported the main author in writing up the case.

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