CASE REPORT

A rare case of small bowel obstruction secondary to ovarian torsion in an IVF pregnancy

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SUMMARY

A 39-year-old woman, who conceived following in vitro fertilisation (IVF) treatment, presented at 12 weeks gestation with symptoms of ovarian hyperstimulation syndrome (OHSS), abdominal pain, vomiting and diarrhoea. Subsequent investigations found small bowel obstruction secondary to ovarian torsion. Surgical management to remove a necrotic ovary and fallopian tube led to a good recovery from the acute illness. A postoperative ultrasound scan confirmed a viable pregnancy and the patient was discharged. Her case demonstrates a rare complication of OHSS and ovarian torsion leading to small bowel obstruction.

BACKGROUND

Ovarian hyperstimulation syndrome (OHSS) is a well-documented risk associated with in vitro fertilisation (IVF) treatment. The following case describes a rare complication of OHSS, which threatened the life of the patient and the successful progression of a valuable pregnancy, and highlights the diagnostic challenge of abdominal pain during pregnancy. It demonstrates that serial routine examination and investigations, as well as high level of vigilance from the clinicians involved, can lead to unravelling of complex cases and the institution of effective treatment.

CASE PRESENTATION

A 39-year-old Japanese woman presented at 12 weeks gestation in her first pregnancy to the accident and emergency department with a 1-week history of worsening abdominal distension and intermittent severe right iliac fossa pain, which was associated with nausea, vomiting and episodes of loose stools. She had undergone IVF treatment where two embryos were transferred. An ultrasound performed at 10 weeks had previously confirmed a viable, singleton intrauterine pregnancy. Her medical history was unremarkable. Her gynaecological history included subfertility of unknown origin, a cervical cone biopsy in 2010 and a hysteroscopic removal of an endometrial polyp in 2009. She was using progesterone 400 mg pessaries and bromocriptine following IVF treatment but was not on any other regular medication, did not drink alcohol and was an ex-smoker. On initial examination she was afebrile (36.3°C) and her other observations were normal (blood pressure 115/78, heart rate 62, respiratory rate 18, O₂ saturation 100% on room air). Her abdomen was soft, with no signs of peritonism, but tender in the right iliac fossa

and mildly distended. Bowel sounds were present. Respiratory and cardiovascular examinations were unremarkable.

INVESTIGATIONS

Blood tests on admission showed haemoglobin of 11.6 g/dl, haematocrit of 0.332, white blood cells of $21 \times 10^9/l$, platelets of $622 \times 10^9/l$ and C reactive protein of 11.6. Her urea and electrolytes as well as her liver function tests were within the normal range, except for an albumin of 31 g/l. A Doppler ultrasound of the abdomen and pelvis revealed bilateral enlarged ovaries (right $5.6 \times 5.7 \times 4.7$ cm and left $6.8 \times 5.9 \times 7$ cm), faecal overload and free fluid in the right paracolic gutter. The appendix was not visualised and there was no evidence of acute cholecystitis. Despite supportive management for OHSS, over the following days her abdominal pain worsened and she developed signs of intestinal obstruction with bilious vomiting and no flatus per rectum. A nasogastric tube was inserted and the patient was managed expectantly with intravenous fluids, analgesics, antiemetics and laxatives. Her inflammatory markers normalised but as her albumin was 28 g/l she received 2 units of human albumin. Despite conservative management the patient's condition deteriorated, with increased abdominal distension and generalised tenderness, which was worse in the periumbilical region and the right iliac fossa. Subsequent MRI also demonstrated the enlarged ovaries (figure 1) and in addition revealed small bowel obstruction with a transition point in the right iliac fossa, within the distal third of the ileum (figures 2 and 3). The right ovary, which was situated in proximity to the transition point, was bulky with haemorrhagic stroma and torsion was felt to be likely (figure 4).

TREATMENT

A laparoscopy was undertaken, using an open approach for pneumoperitoneum from the upper abdomen, which revealed a tortured and necrotic right ovary. The left ovary was also cystic but appeared healthy with no evidence of torsion. The terminal ileum was very adherent to the right ovarian mass resulting in the small bowel obstruction. The general surgical consultant relieved the small bowel obstruction by dissecting the adhesions between the tortured ovary and the small bowel, before a gynaecologist proceeded with a right salpingoophorectomy for ovarian torsion. There were no intraoperative complications and minimal blood loss. Following the operation the patient was

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Figure 1 Coronal T2-weighted image also showing the enlarged ovaries. Note that the right ovary (red arrow) is larger than the left (yellow arrow).

Figure 2 Coronal true fast imaging with steady-state precession image shows bilateral ovarian enlargement (blue arrows) consistent with the history of OHSS and multiple dilated small bowel loops (red arrow). There is free fluid within the abdomen (green arrow).

Figure 3 Axial T2-weighted image shows a transition point within the distal small bowel (yellow arrow) adjacent to the torsed right ovary (red arrow, only partly seen on this image).

treated with intravenous fluids and broad spectrum antibiotics (1.2 g coamoxiclav three times a day). Histology confirmed intraoperative findings (figure 5).

OUTCOME AND FOLLOW-UP

The patient's postoperative recovery was unremarkable and her inflammatory markers quickly normalised after surgery. Two further units of albumin were required for hypoalbuminaemia (26 g/l). A transvaginal ultrasound scan confirmed a viable intra-uterine pregnancy and the patient was discharged 5 days post-operatively. Progesterone supplementation was continued until 34 weeks gestation and subsequent antenatal course has been uneventful.

DISCUSSION

IVF treatment and its complications are becoming increasingly common as the mean maternal age rises. Risks of IVF include OHSS, ectopic pregnancy, multiple pregnancy and later obstetric complications such as preterm labour and preeclampsia.¹

Figure 4 On this T1-fat suppressed axial image, the right ovary shows a high signal rim indicative of haemorrhagic change (yellow arrow) and this is often visualised on MRI in cases of established ovarian torsion.

Figure 5 Intraoperative laparoscopic picture showing a necrotic right ovary (RO) and right fallopian tube (RF).

Furthermore, IVF pregnancies complicated by OHSS are associated with a greater risk of adverse obstetric outcome.²

Evidence suggests 33% of women undergoing IVF cycles are affected by mild forms of OHSS and 3–8% of IVF cycles are complicated by moderate or severe OHSS.³ The incidence of OHSS is increased in young women, women with polycystic ovaries and in cycles where conception occurs, particularly multiple pregnancies.

Torsion of the ovary is an acute gynaecological disorder with an incidence of 3%.⁴ Ovarian torsion is also a rare complication of OHSS, which requires prompt intervention, especially during pregnancy. A previous case report by Arena *et al*⁵ describes a case of ovarian torsion in an IVF twin pregnancy and emphasises that early diagnosis is of utmost importance for ovarian preservation. A high clinical suspicion is crucial, with awareness that the classical symptoms and signs of torsion may be absent, or complicated by the coexistence of OHSS. Doppler ultrasound should be considered as a first-line investigation and complete absence of vascular flow in the ovary may be an indication for surgical intervention. After the first trimester, MRI without contrast can also be performed if the diagnosis on ultrasound is equivocal, as MRI offers the benefit of more detailed cross-sectional imaging with no harmful ionising radiation.⁶ Lo *et al*⁷ analysed data from 179 non-pregnant patients admitted to a medical centre with surgically proven ovarian torsion from 1997 to 2006. Unfortunately, a diagnosis of ovarian torsion was missed in half of the patients because clinical features are non-specific and objective findings are uncommon. Both papers^{5 7} report that a laparoscopic approach for ovarian torsion is recommended owing to shorter hospital stay, fewer post-operative complications and ovarian preservation when possible.

A literature search did not find any published articles linking the three conditions of OHSS, ovarian torsion and small bowel obstruction. Small bowel obstruction is a rare occurrence pregnancy estimated to affect less than 1 in 1500 deliveries.⁸

The most common causes of mechanical obstruction are adhesions (58%), volvulus (24%) and intussusceptions (5%).⁸ Previous abdominal or pelvic surgery is found in the majority of patients with obstruction owing to adhesions.^{8 9} Intestinal obstruction should be considered in any pregnant patient with an abdominal scar and the characteristic signs and symptoms of obstruction,¹⁰ abdominal pain (89–98%), vomiting (82–89%), constipation (80%) and tenderness to palpation (71%).^{8 9} To conclude, small bowel obstruction is a rare, but a serious complication during pregnancy, where both the mother and the fetus are at risk. Clinical suspicion is crucial and should be increased in a patient with an abdominal scar.

Learning points

- ▶ In vitro fertilisation (IVF) is becoming an increasingly common reproductive technique and clinicians and patients must be aware of its potential risks.
- ▶ A common and well-documented complication of IVF such as ovarian hyperstimulation syndrome may obscure a more ominous pathology and close observation, monitoring and intervention in a timely manner are important for prompt management and treatment.
- ▶ Multidisciplinary management utilising diverse skill sets facilitated the treatment and optimal management of this complex case.
- ▶ High index of suspicion of intestinal obstruction in pregnancy is critical and should be increased in a patient with abdominal scar.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Gelbaya TA. Short and long-term risks to women who conceive through in vitro fertilization. *Hum Fertil* 2010;13:19–27.
- 2 Courbiere B, Oborski V, Braunstein D, *et al*. Obstetric outcome of women with in vitro fertilization pregnancies hospitalized for ovarian hyperstimulation syndrome: a case-control study. *Fertil Steril* 2011;95:1629–32.
- 3 RCOG (2006) Green-top guidelines No.5 Management of OHSS. Available from: <http://www.rcog.org.uk/womens-health/clinical-guidance/management-ovarian-hyperstimulation-syndrome-green-top-5> (accessed 15 Oct 2012).
- 4 Becker JH, de Graaff J, Vos CM. Torsion of the ovary: a known but frequently missed diagnosis. *Eur J Emerg Med* 2009;16:124–6.
- 5 Arena S, Canonico S, Luzi G, *et al*. Ovarian torsion in vitro fertilization-induced twin pregnancy: combination of Doppler ultrasound and laparoscopy in diagnosis and treatment can quickly solve the case. *Fertil Steril* 2009;92:1496.e9–13.
- 6 Spalluto LB, Woodfield CA, DeBenedictis CM, *et al*. MR imaging evaluation of abdominal pain during pregnancy: appendicitis and other nonobstetric causes. *Radiographics* 2012;32:317–34.
- 7 Lo LM, Chang SD, Horng SG, *et al*. Laparoscopy versus laparotomy for surgical intervention of ovarian torsion. *J Obstet Gynaecol Res* 2008;34:1020–5.
- 8 Perdue PW, Johnson HW, Stafford PW. Intestinal obstruction complicating pregnancy. *Am J Surg* 1992;164:384–8.
- 9 Hill LM, Symmonds RE. Small bowel obstruction in pregnancy: a review and report of four cases. *Obstet Gynaecol* 1977;49:170–3.
- 10 Myerson S, Holtz T, Ehringreis M, *et al*. Small bowel obstruction in pregnancy. *Am J Gastroenterol* 1995;90:299–302.

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