

Bilateral ovarian abscesses following transvaginal oocyte retrieval for IVF: A case report and review of literature

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Abstract Ultrasound-guided transvaginal oocyte retrieval (TVOR) is a relatively simple and atraumatic method with rare complications as well as the possibility of doing it under sedation. It has become the method of choice in most IVF centres, because it results in excellent oocyte yields, with increased speed and excellent follicle and major pelvic vessel visualization, thereby decreasing the probability of vessel puncture [1]. However, the technique is not without risk such as pelvic infection, bleeding secondary a blood vessel puncture or pelvic visceral trauma. Consumption coagulopathy is a serious complication of pelvic infection and sepsis which can be life threatening if not diagnosed and corrected early, especially if surgical intervention is required. We present a case of bilateral ovarian abscesses following transvaginal oocyte retrieval showing early signs of consumption coagulopathy.

Keywords Infertility · IVF · Assisted reproduction · Oocyte retrieval · Ovarian abscess

A 35 year old, nulliparous lady was admitted to the emergency gynaecology ward complaining of left iliac fossa pain for 5 days. On the day of admission she had diarrhoea and vomiting 3 times and started fresh vaginal bleeding. She gave history of undergoing a TVOR for IVF 16 days earlier. She had 2 embryos replaced in-utero 2 days after egg collection. On admission, her vital signs were all normal. A provisional diagnosis of ovarian hyperstimulation syn-

drome (OHSS) was made and she was started on clexane 20 mg, daily subcutaneous injections. However, the pregnancy test was negative. A full blood count (FBC) showed that the haemoglobin (Hb) 14.4, white blood cells (WBC) 17.6, platelets 377, neutrophils 15.7. Urea and electrolytes (U&Es) and liver function tests (LFTs) were normal.

A transvaginal scan revealed a solid mass between the uterus and left ovary measuring 3.8 × 3.8 × 3.5 cm. The left ovary measured 3.8 × 3.5 cm and contained several follicles. The right ovary measured 4.0 × 3.3 cm and contained several follicles. The uterus appeared normal with thin endometrium measuring 5 mm. There was no free fluid in the pelvis.

She remained well and her vital signs were normal the day after admission. However, her temperature went up to 38.2°C in the evening. Therefore, blood was sent for culture and sensitivity (C&S) and intravenous Cefuroxime and Metronidazole were commenced. Over the following 48 h, she continued to have swinging pyrexia whilst the blood culture revealed no growth. The antibiotics were changed into Clindamycin and Gentamicin after seeking the opinion of a consultant microbiologist. From the day of admission onwards, she had daily laboratory blood tests which revealed a decreasing Hb of 12.5, 11.9, 10.8; an increasing WBC 16.4, 25.3, 27.2; neutrophil 13.7, 22.1, 23.6; Plt 379, 366, 423; CRP (C-reactive protein) 363.2, 365.8; INR [International Normalized Ratio = Prothrombin Time expressed as ratio compared to control] 1.3, 1.6, 1.8 (normal range = 0.9–1.2); and APTT [Activated Partial Thromboplastin Time] 0.98, 1.01. On the third day after admission her D-Dimer was greater than 1000 ng/ml. Also, she became unwell, the abdominal pain has become more generalised and clinical examination revealed abdominal guarding and generalised tenderness. In view of the deteriorating clinical condition and blood indices especially the increasing INR, it was de-

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cided to carry out laparotomy on the same day. She received 4 units of fresh frozen plasma and 10 mg of intravenous vitamin K preoperatively. Her immediate preoperative INR decreased to 1.5.

Laparotomy was carried out through a midline sub-umbilical incision. There were inflammatory exudates over the bowels which were adherent to the uterus. Both Fallopian tubes were swollen and both ovaries were enlarged to approximate 6 × 5 cm in diameter. A large amount of pus was drained on incising the capsule of each ovary. A swab from the pus was sent for C&S which later grew staphylococci. The peritoneal cavity was washed with normal saline. Two drains were placed through the abdominal wall in the pouch of Douglas, one close to each ovary. The intravenous Gentamicin and Clindamycin were continued postoperatively. Her clinical condition gradually improved. She became afebrile and the drains were removed on the second postoperative day. The CRP, INR, APTT, WBC and neutrophil counts gradually returned to normal range on the fourth postoperative day when she was discharged home.

Discussion

The technique of TVOR is not without risks, such as injury to blood vessels and haemoperitoneum, trauma to pelvic organs, infection, exacerbation of pelvic inflammatory disease (PID) and rupture of endometriomas [2–4]. Also, before the introduction of this technique, ovarian abscess was almost always part of tubo-ovarian abscess following PID. It has been debatable whether the vagina should be prepared with a topical antibacterial agent before commencing egg collection. While povidoneiodine and chlorhexidine solutions have been used with success, many operators have found such precautions unnecessary and others have suggested that pregnancy rates are lower when iodine-containing solutions are employed [5]. It is also hard to believe that any topical solution will remove all micro-organisms from the vaginal fornices especially if the patient is conscious. The use of antibiotic prophylaxis for TVOR remains controversial because pelvic infection is rare anyway, whether antibiotics are used or not. In a series of 2670 procedures, the incidence of pelvic infection was 0.6% without antibiotic prophylaxis [6]. Half of these infections were classified as severe, with pelvic abscess formation. Another study showed that the post-TVOR infection rate in 674 women to be 1.3%, even though they were given intravenous cephalosporin or oral doxycycline [7]. Another group reported pelvic infection in 0.4% from a large series of 1500 IVF cycles [8]. In most cases, patients have a history of endometriosis, PID, pelvic adhesions or pelvic surgery. Therefore, during oocyte retrieval prophylactic antibiotics is recommended in this group of patients who are at increased risk. In our case, the patient did not receive

prophylactic antibiotics because it was not the policy of her IVF centre to give any.

Direct inoculation of vaginal micro-organisms is thought to be the cause of pelvic infection following TVOR, because no pelvic infection was reported in large series with laparoscopic or abdominal oocyte retrieval. The interval between capsule disruption and clinical presentation may vary, depending on the bacterial inoculum dose, type of bacterium, its virulence and whether the infection occurred secondary to a direct contamination at surgery, or spread through devitalized tissue [9]. A pelvic infection becomes clinically evident within few hours to a few days following oocyte retrieval. However, the time from oocyte retrieval to the manifestation of pelvic abscess is much longer. In the majority of cases, diagnosis will be made within 3 weeks after oocyte retrieval but an interval of up to 56 days has been reported.

Consumption coagulopathy is a serious complication of pelvic infection and sepsis which can be life threatening if not diagnosed and corrected early, especially if surgical intervention is required. In this case the progressively increasing INR, APTT, D-Dimer and decreasing haemoglobin were indicative of a degree of an underlying coagulopathy.

Treatment of ovarian abscess varies depending on the clinical situation. Medical treatment alone is successful in only 34% to 87.5% of patients with pelvic abscess. Surgical intervention, via laparoscopy or laparotomy with drainage of abscess and excision of infected tissue, is normally performed in cases of diagnostic uncertainty or when medical therapy is inadequate. The limitation of laparoscopy is that sometimes severe pelvic adhesions secondary to the abscess formation can prevent completion of the operation. Also, the risk of visceral injury would be higher when significant amount of adhesions are present.

Ultrasound-guided drainage of pelvic abscesses has been described as an alternative to surgery. However, the incidence of residual abscess that requires further surgery despite repeated ultrasound-guided aspiration was 6.6% in a study involving 302 women who underwent 449 aspirations [10]. Therefore, in our case, it was felt that laparotomy would be the best option in view of the lack of improvement on intravenous antibiotics as well as the presence of left adnexal mass on ultrasound scan. Fortunately, it was possible to reserve her ovaries and not to carry out oophorectomy which might be necessary occasionally if the abscess ruptures, or if surrounding organs are affected by the inflamed mass.

Ovarian abscess can be a life threatening complication especially on rupture and hence it requires accurate diagnosis and prompt intervention. Clinicians should consider the diagnosis of ovarian abscess in the differential diagnosis of abdominal pain, fever and leukocytosis after oocyte retrieval for IVF treatment. Initial treatment is with intravenous antibiotics. However, when no response to antibiotics occurs

within 72 h, immediate laparoscopy or laparotomy would be the treatment of choice.

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