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CHICAGO, ILLINOIS

Uterine Abscess After Ultrasound-Guided Ovum Retrieval in an in Vitro Fertilization–Embryo Transfer Program: Case Report and Review of the Literature

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INTRODUCTION

In the evolution of assisted reproductive technology the ultrasound-guided aspiration of oocytes has become the method of choice for in vitro fertilization–embryo transfer (IVF-ET) programs. In the world literature the reported complications of this technique have been few, but sometimes associated with serious sequelae.

We report an unusual case of uterine abscess formation following ultrasound-guided follicular aspiration in an IVF-ET program and review the literature.

MATERIALS AND METHODS

Case Report

The patient is a 31-year-old nulligravida referred because of a history of pelvic adhesions, previously treated by laparotomy and adhesiolysis. We performed a diagnostic laparoscopy which revealed bilateral hydrosalpinges and massive pelvic adhesions.

The patient was started on our standard urofollitropin protocol (1) for IVF-ET. Following 5 days of urofollitropin stimulation, she received 10,000 U of chorionic gonadotropin, 34 hr later, follicular aspiration was performed. Initially, an attempt was made to aspirate the right ovarian follicles transabdominally, because the right ovary was located high in the pelvis. The suprapubic area was prepped with povidone–iodine, and 1% carbocaine was instilled subcutaneously. We used an ultrasound with a 90° sector probe, frequency of 5 MHz (RT3000, General Electric Company, Rancho Cordova, CA), covered with a sterile condom. A 16-G sterile aspiration needle was inserted alongside the probe, but we were unable to needle the ovary. Therefore, transvaginal, ultrasound-guided ovum retrieval was performed using the 5-MHz vaginal transducer covered with a sterile condom, a sterile biopsy guide, and a sterile 16-G aspirating needle. The vagina was prepped with povidone–iodine, irrigated with sterile phosphate-buffered saline, and paracervical 1% carbocaine anesthesia was given. Follicular aspiration was performed using sterile 20-ml syringes, and follicles were flushed twice with Ham's F-10 culture medium (Gibco, Grand Island, NY). Six oocytes were retrieved, and bilateral hydrosalpinges were also aspirated, resulting in a total of 30 ml of dark fluid. An enzyme-linked immunoassay of the tubal aspirates for chlamydial antigen was negative. The procedure was ended and the patient was sent home on oral tetracycline, 250 mg every 6 hr for 2 days, prophylactically. At the time of embryo transfer, 48 hr postfollicular aspiration, the patient complained of mild pelvic pain. The vagina was noted to have a white discharge, a vaginal culture was done, which later grew *Escherichia coli,* and the vagina was thoroughly cleansed with a sterile solution of Ham's

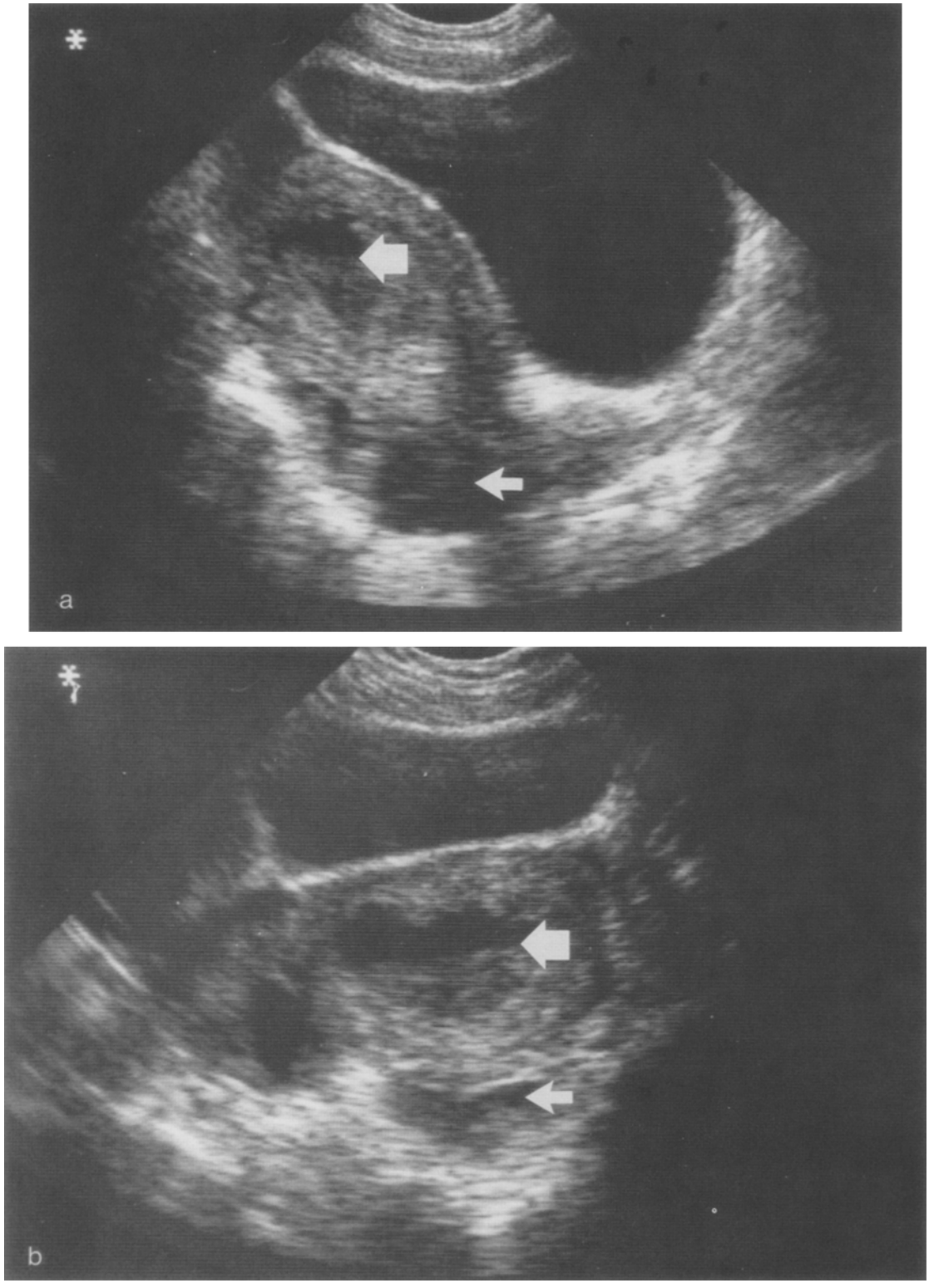

Fig. 1. Sagittal (a) and axial (b) images demonstrate a fluid collection within the uterus associated with a debris/fluid level (large arrows). There is also a significant amount of fluid seen within the cul-de-sac (small arrows).

F-10 medium (GIBCO, Grand Island, NY). Two days after transfer of two embryos the patient had a temperature of 38.1°C and complained of severe abdominal pain. A pelvic ultrasound exam revealed ovarian hyperstimulation, and the blood leukocyte count was 16,000. The patient was admitted to the hospital with a diagnosis of pelvic inflammatory disease. She was treated with intravenous cefoxitin, became afebrile, and had resolution of her symptoms within 3 days. All blood and urine cultures were negative. She was switched to oral cephalexin and sent home. The next day a follow-up ultrasound exam demonstrated persistent ovarian hyperstimulation and a fluid collection in the uterine cavity (Figs. 1a and b), which was aspirated transcervically, resulting in 15 ml of purulent fluid. The patient was readmitted to the hospital with a diagnosis of uterine abscess, a dilatation and curettage were performed to drain the uterine cavity, and she was placed on intravenous gentamycin and clindamycin. All cultures were negative, and the patient remained afebrile, was discharged after 5 days, and was sent home on oral doxycycline plus clindamycin. A repeat ultrasound, obtained 4 weeks later, showed resolution of both the ovarian hyperstimulation and the intrauterine fluid collection (Fig. 2).

Subsequently the patient resumed her menses and was reevaluated 2 years later for another attempt at IVF-ET. A cervical culture was positive for chlamydia and she was treated with oral doxycycline. A hysteroscopy revealed a normal uterine cavity. A repeat IVF-ET cycle, with transvaginal, ultrasound-guided follicular aspiration, was performed without complications, but the patient did not get pregnant.

DISCUSSION

The ultrasound-guided aspiration of ovarian follicles has many advantages over other techniques such as laparoscopy and minilaparotomy (2,3), since there is no exposure of the oocytes to general

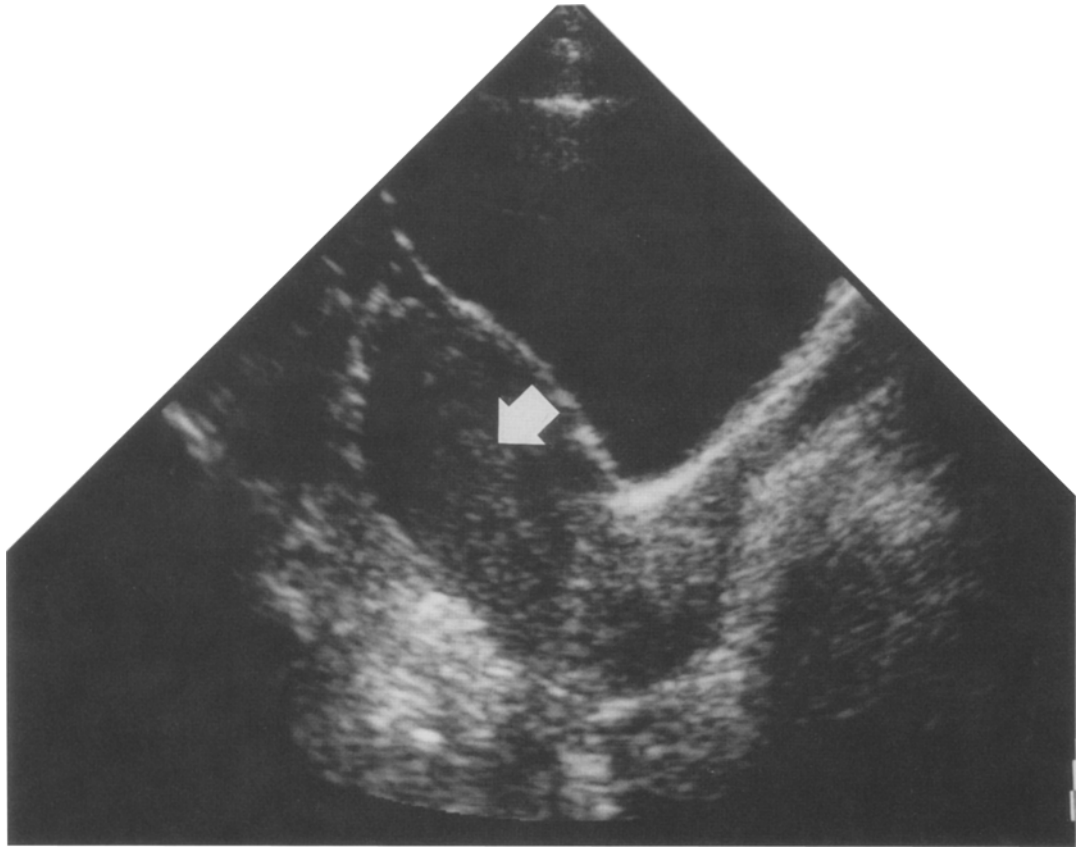

Fig. 2. Sagittal image demonstrates a normal central uterine echo (arrow) with no evidence of residual intra- or extrauterine fluid.

Table I. Reported Cases in the Literature of Pelvic Infection After Ultrasound-Guided Aspiration of Ovarian Follicles in IVF-ET

Ref.	Cases	Retrievals	PID[a] incidence (%)	Diagnosis	Treatment
Gembruch *et al.* (2)	1	588	0.2	Hydrosalpinx/PID	Antibiotics
Tanbo *et al.* (3)	1	80	1.3	PID	Antibiotics
Howe *et al.* (5)	3	92	3.3	1. Hydrosalpinx/TOA[b]	Antibiotics
				2. Hydrosalpinx/ruptured TOA	TAH/BSO[c]
				3. PID	Antibiotics
Yuzpe *et al.* (7)	3	534	0.6	1. Pelvic abscess	Antibiotics/colpotomy
				2. Pelvic abscess	Antibiotics/colpotomy
				3. Pelvic abscess	Antibiotics
Present report	1	92	1.1	Hydrosalpinx/uterine abscess	Antibiotics/D&C

[a] Pelvic inflammatory disease.
[b] Tuboovarian abscess.
[c] Total abdominal hysterectomy/bilateral salpingo-oophorectomy.

anesthetics, carbon dioxide, or general anesthesia-induced hyperprolactinemia (2).

Various techniques of ultrasound-guided ovum retrieval have been used for IVF-ET including transvaginal, transvesical, transurethral, and percutaneous transabdominal approaches (2,4). These techniques offer excellent visualization of the major pelvic vessels, thereby decreasing the probability of vessel puncture (2). The transvaginal, ultrasound-guided follicular aspiration has now become the method of choice in most IVF-ET programs because it results in excellent oocyte yields (3), with increased speed, excellent follicle visualization, and avoidance of a prefilled urinary bladder (2). Despite the advantages of ultrasound-guided ovum retrieval, there are some inherent risks, such as injury to blood vessels, trauma to pelvic organs, and infection (5). Recently, Jones *et al.* (6) have reported on a traumatic ureteric obstruction following oocyte recovery for IVF-ET, using a vaginal probe and needle guide.

In this report, we present one case of uterine abscess from our original series of 92 consecutive cases of in-office ultrasound-guided follicular aspiration. We have been unable to pinpoint the exact event which incited the infection, since multiple procedures were involved. First, there was an aborted percutaneous procedure, then a transvaginal oocyte retrieval, accompanied by the aspiration of bilateral hydrosalpinges. In addition, at the time of embryo transfer the patient complained of some pelvic pain, and her vagina was later found to be colonized by a significant number of gram-negative aerobic bacteria. Nevertheless, we have reviewed the literature and have found documentation of four other reports of pelvic infection (2,3,5,7), following ultrasound-guided ovum retrieval (Table I). These reports demonstrate that follicular aspiration under ultrasound guidance can result in serious pelvic infections.

The true incidence of infectious morbidity in ultrasound-guided ovum retrievals is not known, however, it appears that infections are very rare. Indeed, a review of recent reports in the literature on the use of ultrasound-guided follicular aspiration reveals no infections in more than 1500 combined cases (4,8–12). Therefore, the incidence of pelvic infection found in the above case report (Table I) appears to be an overestimation, with the overall actual incidence being less than 1%.

CONCLUSIONS

In summary, pelvic infection is a rare but potentially serious complication of ultrasound-guided ovum retrieval in IVF-ET programs.

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Life-Threatening Rupture of an Interstitial Ectopic Pregnancy Arising from Oocyte Donation: Failure of Early Detection by Quantitive Human Chorionic Gonadotropin (hCG) and Progesterone Estimation

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INTRODUCTION

Ectopic implantation occurs relatively frequently after in vitro fertilization and embryo transfer (1), and many assisted conception units routinely check for ectopic pregnancy by serial measurement of serum progesterone and human chorionic gonadotropin after embryo transfer. We report a case in which these indices proved misleading.

CASE REPORT

The patient was a 41-year-old parous woman who had been sterilized by laparoscopic tubal cautery in 1981, following which she subsequently remarried and presented requesting reversal of sterilization in 1989. Laparoscopic assessment of the pelvis revealed only 2-cm-distal tubal remnants, with no visible fallopian tube at the uterine cornua. The patient was, therefore, referred for in vitro fertilization.

Stimulation of follicle growth with human menopausal gonadotropin [hMG; Pergonal; Serono (Australia) Ltd.] was attempted on four occasions in 1990. Two cycles were canceled due to poor response (no follicles on transvaginal ultrasound scan after 5 days of stimulation) and the other two cycles yielded a total of three oocytes. One oocyte failed to fertilize, the second oocyte fertilized but failed to cleave, and the replacement of a single four-cell embryo failed to achieve a pregnancy.

The patient became oligomenorrheic between treatment cycles, and levels of gonadotropins fluctuated between pre- and postmenopausal levels [follicle-stimulating hormone (FSH) levels of 4–28 IU/