Term delivery following pyometra after in vitro fertilization and embryo transfer

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ABSTRACT
A 30 year old woman presented 12 days after embryo transfer with lower abdominal pain and orange vaginal discharge. She was diagnosed to have pyometra. A conservative management with drainage of the pyometra was followed by an uneventful pregnancy and term delivery. Conservative management in a case of pregnancy with pyometra needs close supervision to ensure maternal and fetal well being.

KEY WORDS: Embryo transfer, pregnancy, pyometra

INTRODUCTION
Pyometra is a rare complication of in vitro fertilization and embryo transfer. In this paper, we present the conservative management and successful term delivery of such a case.

CASE REPORT
A 30-year-old female, married for 7 years presented to our clinic with primary subfertility. Her periods were regular. She had a history of recurrent ovarian cyst on the left ovary for which both laparoscopic cystectomy and laparotomy had been done. The histopathology revealed a benign ovarian cyst. At laparoscopy, both tubes appeared to be normal and were patent. Her husband’s semen analysis report was normal. She underwent three cycles of controlled ovarian stimulation with intrauterine insemination which were unsuccessful.

She was counseled for in vitro fertilization (IVF). Her ovarian reserve was normal. A day 2 transvaginal ultrasound showed an antral follicle count of seven on the right side. The left ovary was the seat of a 7 cm clear ovarian cyst. No antral follicles were seen on the left side. The day 2 serum follicle-stimulating hormone was 9 mIU/ml. The cyst was aspirated. Pre-IVF hysteroscopy was normal and the dummy transfer was smooth. She underwent an antagonist cycle. Eight eggs were collected.

Six fertilized and three 8 cell embryos were transferred on the 3rd day after egg collection. She did not conceive in this cycle.

In the 2nd cycle, she again underwent the antagonist protocol. During ovarian stimulation, the sonologist reported a cystic mass in the left adnexa, which was suggestive of hydrosalpinx. This was aspirated on the day of oocyte retrieval. Eight eggs were retrieved, seven fertilized and three 8 celled embryos were transferred (day 3).

Twelve days after embryo transfer (ET) she complained of pain in the lower abdomen and orange colored, odorless discharge per vaginum. She was afebrile. There was no tenderness on abdominal examination. A per speculum examination was unremarkable. On transvaginal ultrasound scan, the uterine cavity appeared to be distended with fluid and the endometrium was bright and echogenic. No adnexal mass was seen. A Labotect catheter was passed under ultrasound guidance and the aspirate was pus. The pus was sent for culture and sensitivity. The total white blood cell count was 4000 and the differential count was also within normal limits. Serum beta human chorionic gonadotropin (hCG) was 36 mIU/ml.

A conservative management was planned after discussion with the couple. An ultrasound scan done 4 days later revealed that the pus had recollected. A Foley’s catheter was used for continuous drainage of pus. She was on tablet dydrogesterone...
10 mg twice a day. The pus showed no growth of organisms. A single intrauterine gestation was seen 5 days later and the fetal heart was documented a week later. The catheter was removed at this stage as there was minimal pus in the drain. The patient was discharged from the hospital and resumed antenatal care on the outpatient basis.

Her pregnancy thereafter was uneventful. The culture reports for tuberculosis also were negative 6 weeks later. She underwent regular first trimester screening for Down’s syndrome, which was reported as low risk. There was no collection in the uterus by then. At 20 weeks, a detailed fetal anatomy scan showed no obvious anomalies. She had impaired glucose tolerance at 20 weeks and was advised a diabetic diet, which she followed throughout her pregnancy. She had an elective cesarian at 39 weeks and delivered a healthy boy baby weighing 3.2 kg. The postpartum period was uneventful. The baby is currently 1-year-old and has normal milestones of development.

**DISCUSSION**

Pyometra is a rare disorder in humans. The reported incidence is 0.01-0.5% of gynecological patients. It has been reported previously in patients after egg collection. At the time of diagnosis, the endometrium seemed bright and echogenic and the beta hCG was positive. A conservative approach was considered to be the patient was otherwise asymptomatic and there were no systemic features of infection (the blood counts were normal and blood culture was negative). She was admitted to the hospital, so that she could be closely monitored. The source of the collection was unknown. Whether the recurrent cyst aspiration was contributory or was it due to fresh inoculation during ET remained a mystery. There was a plan to perform a laparoscopy to identify the source and perform corrective surgery if there was no spontaneous reduction within a week or if systemic features were to manifest earlier. In view of the early viable pregnancy, the surgical option was deferred.

As the pus culture was sterile we needed to rule out tuberculosis. The concern about conservative management was that it could cause perforation and sepsis. However, as the pus was sterile and the patient parameters were stable a conservative approach was considered acceptable. There were suggestions to terminate the pregnancy as there were concerns if the pyometra could adversely affect the fetus and the mother. As the pregnancy was progressing well as assessed by serial ultrasound, no active interventions were thought necessary. The couple were constantly apprised about the developments. Our concerns regarding the unique nature of their case were made known to them. They wished to continue the pregnancy under close observation.

Lower abdominal pain is not uncommon following ovarian stimulation and IVF/ET. However, orange colored vaginal discharge seemed out of place and she was called in for examination and ultrasound scan. Pyometra is a relatively rare condition. This case also tells us those patients concerns however strange should not be summarily dismissed without proper evaluation. Specific signs should be looked for, such as fever and masses with fluid levels on ultrasound in the uterus, adnexa or pelvis. The mechanism of post-IVF/ET infection apart from direct inoculation of vaginal microorganisms by puncture through the nonsterile vagina, could also be due to reactivation of an old pelvic inflammatory disease, or through inadvertent direct puncture of the bowel with spillage. The most probable source of pus in this case was drainage of the hydrosalpinx and therefore an iatrogenic problem. She got a single dose of injection cefazolin at the time of oocyte retrieval. This could have caused the pus to be sterile.

If drainage of the pus is not adequate to eradicate the focus of infection, removal of the affected organ (salpingooopherectomy or hysterectomy) might be necessary. This is a case where saving the patient takes priority over saving the organ.

Review of published literature showed case reports of pyometra in “postmenopausal” women; and there are only two case reports of “nontuberculous” pyometra in the “reproductive” age group after ovum retrieval for IVF. Both the patients were infertile and possibly pyometra was due to endometritis. Biopsy in one of the cases revealed endometritis, while the other was negative for it.

It has also been reported that early and reliable diagnosis of genital tuberculosis involving state of the art technology, such as DNA polymerase chain reaction (PCR) and/or mRNA-based reverse transcription-PCR (RT-PCR); and treatment before development of the fulminant genital tuberculosis has resulted in higher pregnancy rates. Genital tuberculosis should thus be considered for differential diagnosis of pyometra in young infertile patients as it may aggravate the disease; and resultant peritonitis, which may be life-threatening. A rare case of tuberculous pyometra in a young infertile female confirmed by mRNA-based RT-PCR was reported and the disease resolved after anti-tubercular therapy. They concluded that a combination of high degree of clinical suspicion and “high precision” gene detection methods (e.g. mRNA) in culture-negative cases may be useful in diagnosis of genital tuberculosis.
Pelvic infection post-IVF is known to be associated with poor outcome. Most cases described in the literature are associated with failed IVF, and even if the procedure is successful, the rate of pregnancy loss is high.[8] Therefore if the condition is detected prior to ET, consideration should be given to cryopreserving the embryos and treating the infection first, followed by a frozen ET cycle.[4] Successful pregnancies have been reported following treatment cycles complicated by infection, even when surgical drainage has been required for resolution.[9]

CONCLUSION

Pyometra following IVF/ET is a rare complication. Early diagnosis and management under close supervision is needed. The couple should be adequately counseled about the condition and should be involved in the decision making process. The fact that successful term pregnancy is possible after diagnosis of pyometra tells us that there is a role for conservative management in pregnancy as long as the maternal condition is stable. Termination of pregnancy should be considered in case systemic features of sepsis are present.

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