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PYOSALPINGX – DELAYED COMPLICATION FOLLOWING TRANSVAGINAL OOCYTE RETRIEVAL (TVOR) FOR IN VITRO FERTILIZATION (IVF)

Obstetrics & Gynaecology

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ABSTRACT

Transvaginal oocyte retrieval (TVOR) for in vitro fertilization (IVF) is a standard procedure with very few complications. Although a relatively safe procedure immediate complications like bleeding from the vaginal vault, hemoperitoneum and trauma to the adjoining structures like the bladder, ureter etc and delayed complications like pelvic abscess and fistulas have been reported in literature. We report a case of 29 year old women with past history of pelvic inflammatory disease (PID) who underwent TVOR for IVF and later on presented with right side pyosalpingx, a delayed complication of TVOR. The patient had to undergo salpingectomy. Late manifestation of pyosalpingx supports the notion that the presence of PID is a high risk for infective complications following any pelvic procedure as it provides a culture medium for bacteria to grow slowly after transvaginal inoculation.

KEYWORDS

pyosalpingx, in vitro fertilization (IVF), transvaginal oocyte retrieval (TVOR), complication, ovum pick up (OPU)

INTRODUCTION

In vitro fertilization (IVF) and embryo transfer (ET) is a common treatment modality for management of infertility in today's era. Transvaginal oocyte retrieval (TVOR) is a standard method for oocyte retrieval with very few complications. It's safety and efficacy has been documented and is now considered to be the procedure of choice for OPU in women undergoing IVF.

Complications of TVOR although few, are important as it is an elective procedure (1-5). Pelvic infection and pelvic abscess are infrequent complications of TVOR (6-8). A recent study of TVOR complications by Aragona et al. reviewed 7,098 cases and found that severe peritoneal bleeding requiring surgical intervention occurs in 0.06% and pelvic abscesses occur in 0.03%, demonstrating the rarity of these complications (2). Patients with previous history of Pelvic inflammatory disease (PID), endometriosis etc are at high risk for these complications (2).

Case Reports

A 29 year old woman visited us to seek treatment for male factor primary infertility of 4 years. She had history of hysterolaparoscopy done 2 years back which revealed unhealthy tubes with bilateral fimbrial block, perifimbrial adhesion and ovaries stuck to the uterus. There was no history suggestive of endometriosis. She had good ovarian reserve (AFC 10/ovary and Sr. AMH 3.6). She was stimulated with human menopausal gonadotropin (hMG; Menopur) 225 IU using the antagonist protocol. The antagonist was added from day 5 of stimulation and trigger was given on day 10 of stimulation with rHCG (Ovitrelle 250 IU). Her serum estradiol (E2) level on the day of trigger was 2680 pg/ml and serum progesterone 0.4 pg/ml. She underwent TVOR 34-36 hours after the trigger and 16 oocytes were retrieved. The procedure went uneventful however the ovaries had restricted mobility. The patient received prophylactic antibiotics (intravenous cefotaxim 1g) prior to the procedure. Eleven embryos were frozen at the cleavage stage for embryo transfer (ET) in the subsequent cycle.

She came back for ET in the subsequent cycle after 6 weeks. On examination her vitals were stable, but the transvaginal ultrasonography (TVS) showed a dilated fluid filled tubular structure with low level echoes in the right adnexa measuring 7cm x 6cm x 4 cm with no vascularity on Doppler and minimal probe tenderness as seen in fig 1. The right ovary was noted medial to the dilated mass and had a normal appearance. No accompanying abscess or free fluid was noted. Hence a provisional diagnosis of hydrosalpingx or pyosalpingx was made.

On enquiry she gave history of intermittent right lower abdominal pain but there was no fever. Her laboratory tests revealed mild leukocytosis (11300), raised ESR and elevated C-reactive protein (2.5 mg/ dL). She was given broad spectrum intravenous antibiotics (amoxicillin + clavulanate potassium 1.2 gms BD and metronidazole 500mg iv TDS) over the next 24 hours. A decision for laparoscopy was taken with the consent of the patient and her husband. Intra operatively a 6.5cm x 5.5cm x 4.5 cm right tubal mass suggestive of pyosalpingx as seen in fig 2 was noted.

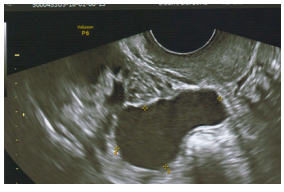

Fig 1 Right Adnexal Tubular Mass On Ultrasonography (TVS)

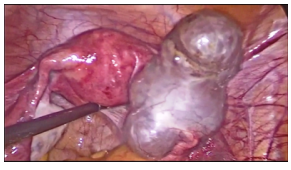

Fig 2 Right pyosalpingx on laparoscopy

The left fallopian tube appeared unhealthy and thick. Bilateral salpingectomy was done and peritoneal cavity was washed with normal saline. Intravenous antibiotics were continued for 2 days postoperatively and later on Doxycycline 100 mg BD was added for another 14 days. Cultures obtained from the specimen were negative while the histopatholgy confirmed right pyosalpingx and inflammation of left fallopian tube. Embryo transfer was done subsequently and she is 7 weeks pregnant currently.

DISCUSSION

Transvaginal oocyte retrieval (TVOR) is now the gold standard for OPU during IVF, although this technique is not without risks, such as hemorrhage, pelvic infection and pelvic injury (1). Reported incidence of pelvic abscess and infections after TVOR is 0.38% (5). Prophylactic antibiotics are recommended in high risk cases like women with history of PID, endometriosis etc (9,10).

Our patient was asymptomatic and presented late with right pyosalpingx. The normal tubo-ovarian anatomy was disturbed due to previous PID leading to increased risk of injury during TVOR. Retrospectively, this injury may have occurred as the tubes were adherent to the ovaries and the posterior wall of uterus. This tubal injury followed by abscess formation as a result of inoculation by vaginal bacteria in the unhealthy tube is the most likely explanation for the pyosalpingx. A single pre-operative dose of antibiotic did not prevent this late complication. Probably a broader-spectrum and / or a more prolonged antibiotic prophylaxis should be considered in such cases.

In order to avoid infective complications, patients with high risk for infections such as those with previous history of endometriosis, PID etc need a thorough vaginal preparation, avoidance of repeat penetration of

the vaginal wall and manipulation during TVOR. In women with endometriosis, aspiration or puncture of endometrioma should be avoided during OPU. Close follow-up for signs of late pelvic infection is also extremely important in difficulty OPU. In cases of hydrosalpingx (visible on TVS), prior treatment by operative laparoscopy should be considered (11).Various prospective studies have shown bilateral salpingectomy improved the pregnancy and implantation rates in patients with hydrosalpinges (11,12,13). Even in cases where the hydrosalpinges are thick-walled and are not visible on TVS, salpingectomy offered better prognosis before IVF (11,13). In patients with severe tubal damage identified on laparascopy as inflammatory thick-walled hydrosalpinges or proximal nodes, bilateral salpingectomy should be offered as it improves the outcome of IVF (11).

However, a few studies that suggested that infertile patients undergoing salpingectomy produced fewer follicles and oocytes on the operated side, probably because of damage or disruption of ovarian vessel during salpingectomy (11). A recent systematic review and metanalysis of 243 articles and 7 studies showed that the amount of gonadotropin required was significantly higher in post-salpingectomy group when compared with pre-salpingectomy group (IV −212.65 [95% CI −383.59, −41.71]) (14). However there was no negative effect of salpingectomy on the ovarian reserve and response (14). Another systematic review including 29 studies showed there was no change in ovarian reserve markers after unilateral salpingectomy while contradictory results were reported for bilateral surgery (15). It further said that ART outcomes improves significantly in case of unilateral salpingectomy for ongoing pregnancy and live-birth rate in treated subjects (15). However the data was conflicting with bilateral salpingectomy. In our case, patient was referred to us after laparoscopy with diagnosis of unhealthy tubes but no hydrosalpingx and was given a course of antibiotics.

It is important to recognize these high risk women and counsel them appropriately. The role of preoperative vaginal disinfection or prophylactic antibiotics for preventing such infections has been studied (16). Using topical antiseptics, such as povidone iodine for preoperative disinfection of the vagina may have an embryotoxic effect and lower the pregnancy rate, but studies are contradictory (17,18). Routine preparation include vaginal cleaning with betadine followed by profuse irrigation with normal saline solution and prophylactic antibiotic starting just before oocyte retrieval. Commonly recommended antibiotics are the cefazoline group as was used in our patient (19,20). Currently there is no standard recommended antibiotic for routine prophylaxis before OPU (21,22). Further, there may be an underreporting of complications following ART procedures. Infectious complications occurring more than 2 months after ART are generally not reported (22). The interval between oocyte retrieval and having an infectious complication is highly variable and could range from 4 to 120 days (22). Hence these patients must be counseled to follow up in case of fever or pelvic pain. Despite all these prophylactic measures, few patients may develop tuboovarian abscess or pyosalpingx, as in our case. Surgical correction of post TVOR pyosalpingx is the best approach to avoid any serious complications.

In conclusion, we report a case of unilateral pyosalpinx following OPU. Although the incidence of tuboovarian abscess and pelvic infections following TVOR is generally low (0.03% and 1.3%), one needs to be vigilant in women with previous history of PID, endometriosis etc. Inadvertent injury can occur to the adnexa like the fallopian tubes during OPU due to distorted anatomy. These patients may present with late pelvic infection as a result of initiation of a new infection following trauma to the adnexa during the OPU. This adnexa may get infected as a result of inoculation of bacteria into the peritoneal cavity or ovary during TVOR by the collecting needle or due to reactivation of a latent pelvic infection (6,17).

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