Ectopic Pregnancy Occurred after Oocyte Intrauterine Transfer (OUT) - A Case Report -

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Summary: Although still an experimental procedure, it is hoped that oocyte intrauterine transfer (OUT) could become a convenient technique for initiating pregnancy. A 33-year old woman received OUT treatment after a period of infertility lasting for 3 years. Two weeks later the result of pregnancy test was positive, but shortly thereafter she complained of vaginal bleeding. Ultrasonography revealed a cystic lesion in her right adnexal area without any ascites. At laparotomy, a right side tubal pregnancy was confirmed. This is the first case report of ectopic pregnancy occurring after OUT. It was speculated that the OUT may have caused the tubal pregnancy. However, since the precise mechanism for embryonic implantation to the tubal epithelium is unknown, the causal relationship between OUT and tubal pregnancy remains unclear.

Key words oocyte transfer, ectopic pregnancy, invitrofertilization and embryotransfer, transvaginal hydrolaparoscopy

INTRODUCTION

Recent advances in artificial reproductive techniques (ART) have been encouraging. However, patients are usually required to make repeated visits to the hospital for follicular monitoring, hormone therapy and finally oocyte retrieval. The clinical application of ART is, therefore, expensive, time consuming, and highly stressful for the patient.

Against this backdrop, it has been suggested that oocyte intrauterine transfer (OUT) could become a convenient new procedure in the ART repertoire [1]. The results of previous studies describing same-day transfer of oocytes and spermatozoa to the uterus are promising [2,3]. Since actual experience with OUT is limited, however, its clinical value remains to be determined.

The fallopian tube plays an essential role in gamete transport, fertilization and the early development of the embryo [4], and damage to the fallopian tube

and pelvic inflammatory diseases are usually regarded as major risks for ectopic pregnancy [5-7]. Hence, most infertile women requiring ART should have an increased risk for ectopic pregnancy. We present here the first ever report of a case of tubal pregnancy occurring after OUT, and briefly discuss the causal relationship between ART and tubal pregnancy.

CASE REPORT

A 33-year old null-gravid woman suffered from infertility lasting for 3 years. Her husband already had 3 children with a former wife, suggesting his normal reproductive capacity. Her hormonal profiles of the pituitary-gonadal axis were not remarkable. Hysterosalpingography revealed that both tubes were blocked, indicating tubal atresia. Transvaginal hydrolaparoscopy also showed perfallopian tube adhesion, presumably due to chlamydia trachomatis infection (Fig. 1 and Fig. 2). OUT was performed after obtain-

ing informed consent from the patient and approval for the procedure by the institutional review board. Short-term administration of gonadotropin releasing hormone (GnRH) agonist was used to achieve controlled ovarian stimulation. When the diameter of dormant follicles reached about 2 cm, 5,000 IU human chorionic gonadotropin (HCG) was administered. Transvaginal oocyte retrieval was performed 35 h after the HCG administration. Eight oocytes were retrieved and incubated for 5 h in a fertilization medium

(Quinn TM, Australia) in 5% CO₂ and 80% Nitrogen gases at 37°C. According to the recommendations of the Japan Society of Fertility and Sterility [8], three oocytes were transferred to the uterus using an echo marked tip (ET) catheter after sexual intercourse. Fourteen days after OUT, she complained of a spotting bloody discharge, and showed serum HCG of 333 mIU. At day 21 following OUT, although the level of serum HCG elevated to 1,800 mIU, no intrauterine gestational sac could be identified. Instead, a cystic lesion was observed in her right adnexal area without ascites, and the genital bleeding continued. She finally underwent a laparotomy to confirm the right tubal pregnancy (Fig. 3 and 4), and chorionic villi were observed in the resected tissue (Fig. 5). The serum level of HCG then decreased to 2.0 mIU within two weeks.

Fig. 1. Transvaginal hydrolaparoscopy, showing peritubal adhesion with sigmoid colon of the left Fallopian tube.

Fig. 2. Transvaginal hydrolaparoscopy. The balloon-like swelling was observed in the right side Fallopian tube.

Fig. 3. At laparotomy, the Fallopian tube swelling was revealed.

Fig. 4. In the resected tissue, the Fallopian tube was filled with coagulated blood.

Fig. 5. In histological examination, chorionic villi were observed in the resected tissue. Original magnification 100×(HE)

DISCUSSION

Unfortunately, our clinical trial of OUT for an infertile patient resulted in the occurrence of tubal pregnancy, and the OUT itself seemed to be a likely cause of the ectopic pregnancy. However, it remains uncertain whether the tubal pregnancy resulted from the OUT or from other factors.

A number of risk factors for ectopic pregnancy are known in humans, and ART also may increase the risk of tubal pregnancy. However, in approximately one-third [9] to one half [10] of ectopic pregnancies, no risk factors can be identified.

The era of ART began in 1978 with the first report of in vitro fertilization [11]. The earliest record of ectopic pregnancy was described by Abu al-Qasim al-Zahrawi, the father of modern surgery, in 963 [12], indicating that ART was not essential for the development of tubal pregnancy.

Current knowledge of the aetiology of tubal ectopic pregnancy has focused on embryo-tubal transport. Effective tubal transport of ova, sperm and embryo is a prerequisite for successful spontaneous pregnancy, and transport of the embryo through the Fallopian tube is controlled by smooth muscle contraction and ciliary beating [13,14].

The interaction between the genital tract and developing embryo is not fully understood, and tubal pregnancy is currently thought to be caused by a combination of retention of the embryo within the Fallopian tube due to impaired embryo-tubal transport and alterations in the tubal environment allowing early im-

plantation to occur.

Embryonic implantation consists of three related and consecutive phases: apposition, adhesion between trophoectoderm and endometrial epithelium, and invasion. In order to establish pregnancy, the initial apposition and adhesion of the blastocyst to maternal endometrium must occur in a coordinated manner.

Among animal species, tubal ectopic pregnancy would appear to be restricted to primates. Given the striking absence of tubal ectopic pregnancy in other mammals, attention has been focused on the fact that the compositions of tubal fluid and uterine fluid are similar in primates [15]. However, the roles played by tubal fluid and uterine fluid in human embryonic implantation are not clear [16].

The mechanisms responsible for ectopic pregnancy, thus, are still largely unknown. Patients considering ART should be informed of the increased risk for ectopic tubal pregnancy.

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