Combined intrauterine and ovarian pregnancy after in vitro fertilization and embryo transfer: A case report

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Summary

We describe the natural course and the management of a very rare combined intrauterine and ovarian pregnancy after IVF/ET. The rarity of heterotopic and ovarian pregnancies, with the etiologic, diagnostic and therapeutic aspects of this rare case are reported.

Key words: Combined pregnancy; Ovarian pregnancy; IVF/ET.

Introduction

Heterotopic pregnancy is a rare event that occurs in about one percent of all pregnancies with assisted reproductive technologies [1].

The presence of only one tube is considered a predisposing factor, but the chance of ectopic implantation also depends on the technique of embryo transfer (ET) [2, 3]. Several authors have described heterotopic tubal pregnancies or cornual pregnancies. However in the literature no cases of heterotopic ovarian pregnancy after IVF have been reported, although ovarian implantation of pregnancy after in vitro fertilization (IVF) or after intrauterine insemination have been described [4].

According to many authors five percent of all clinical pregnancies after IVF/ET result in ectopic pregnancies [5, 6] and most of them are located in the fallopian tube, rarely bilaterally.

In the literature also rare cases of abdominal, cornual, and cervical pregnancy after IVF/ET have been reported [4].

We report a case of combined ovarian and intrauterine pregnancy after IVF and discuss the theoretical etiology of this uncommon pathology.

Case Report

F.C., a 38-year-old white woman, complained of eight years of primary infertility. When she was 34 years old she underwent right ovarian-salpingectomy because of a large sacto salpingitis and left ovarian cystectomy because of endometrioma. A laparoscopic second-look revealed the presence of pelvic adhesions between the uterus, the bowel and the ovarian surface, but a patent left tube.

Because spontaneous pregnancy did not occur afterwards, she was referred to us for IVF/ET. Ovarian stimulation was achieved by the use of GnRH-agonist (Lupron acetate, Enantone depot 3.75; Takeda, Italy) and p-FSH (Metrodin, Serono, Italy) in a long protocol. The ovum pick-up took place on cycle day 13 (5 oocytes), and three good quality embryos were transferred in to the uterine hollow on cycle day 15. For transfer a Wallace catheter and 10 µl transfer medium was used locked with 5 µl of medium on each side; it were flushed about 1/2 cm from the uterine fundus. The ET was described as easy and uneventful. The luteal phase was supported by 50 mg daily of progestene IM.

Fourteen days after ET beta-hCG was 122 IU/L, and it showed a normal increasing value on days 18-21-28 after ET. At approximately six weeks of gestation, the patient was admitted to the hospital with lower abdominal pain. The beta-hCG level was 18,000 IU/L. Ultrasonography showed an intrauterine gestational sac with internal echoes but no fetal heart; in the left ovary an anachoic space with an hyperechoic wall of 15x10 mm was revealed with internal echoes but no fetal heart beat; there was free fluid in the pouch of Douglas.

An ovarian-combined intrauterine pregnancy was suspected.

We considered performing laparoscopy but because of persistent abdominal tenderness and distension and falling blood concentration (Hb 10.3 vs 7.6; hct 29.1 vs 21.6; Beta-hCG= 7,200), and shock of the patient (AP= 60/40), emergency surgery was required. A massive hemoperitoneum (1,500 cc) was noted and left adnexal volume was increased because of a voluminous hemorrhagic corpus luteum (LC), without signs of hyperstimulation. An ovarian resection and reconstruction of the ovary with uterine curettage were performed.

Histological findings confirmed: 1) the presence of a throphoblastic implant on a ruptured LC in the left ovary and free trophoblastic tissue including an anchoring villus in the Douglas pouch; 2) endometrium in maximum deciduation with the presence of an anchoring villus.

Discussion

Ovarian pregnancy is a rare form of ectopic pregnancy (EP) accounting for 3-5% of all EPs after natural conception, and for 0.3% after IVF/ET [7].

It has been estimated that the incidence of spontaneous combined intrauterine and ectopic pregnancy is one in 30,000 deliveries [4], even if an increased incidence of this is seen after assisted reproductive technology (nearly 0.7%) [8].

A review of the world literature in IVF/ET to date reveals that approximately 5% to 7% of all clinical pregnancies result in ectopic gestations [9].

The incidence of ectopic pregnancy increased from 3.9% or 5.0% with none or two permeable tubes to 12.3% with one permeable tube [4].

Revised manuscript accepted for publication March 10, 2001

Several studies have shown that the risk of ectopic spontaneous pregnancy increases with the number of sexual partners, early age at first intercourse, history of abdominal surgery and pelvic inflammatory disease/salpingitis, history of infertility and sterility and smoking. Many of these factors were present in our patient.

The exact mechanism of this case of heterotopic pregnancy is unclear, but it was a risk to the patient. Reverse migration of an embryo toward the fallopian tube and implantation in the ovary is the most probable cause but it may be related to the transfer technique and is more likely to occur ectopically as a result of a high fundal transfer and with a volume of transfer medium >50 µl. The position of the patient at the time of ET may be another factor. However the reverse migration of an embryo could also be due to high estrogen levels after ovarian stimulation. Each of these hypotheses could have been the cause in our case, but it is not sure.

The preoperative diagnosis was obtained by ultrasonography, which remains, together with the clinic data and serum beta-hCG titers, the most important instrument of preoperative non-invasive diagnosis.

When beta-hCG titers are altered a possible diagnosis of unruptured ectopic pregnancy should be considered. In a combined intrauterine and extrauterine pregnancy, the beta-hCG titers rise appropriately and a normal intrauterine gestation is seen sonographically, although an extrauterine sac can initially be missed.

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