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Successful Pregnancy Following the Ethanol Sclerotherapy in a Woman With Endometrioma With a History of Recurrent Cleavage Formation after ICSI: A Case Report

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Abstract

Introduction: Endometriosis is a chronic inflammatory condition affecting 6 to 10% of the women at reproductive age. The clinical manifestations of this condition differ according to its location.

Case Presentation: In this study, the case of a 30-year-old infertile woman presented with a history of abdominal pain and three times cleavage formation arrests after Intracytoplasmic sperm injection (ICSI) was reported. Ethanol sclerotherapy (EST) was selected due to abdominal pain and previous in vitro fertilization (IVF) cycles, and ovarian stimulation was initiated eight weeks later. The patient was stimulated in a minimal stimulation protocol. A total of six oocytes were retrieved, resulting in 3 embryos of good to moderate quality that were frozen. The patient became pregnant following two embryo transfers in the FET cycle.

Conclusion: EST may have been considered as a first-line therapy to treat infertility after the failure of IVF. It was found that EST may have improved IVF outcomes.

Keywords: Endometrioma, Intracytoplasmic sperm injection, IVF, In vitro fertilization, Ethanol sclerotherapy

Introduction

Endometrial stroma and glands development outside of the uterine cavity is referred to as endometriosis. Over 10% of the women worldwide are affected by this prevalent gynecologic problem (1). Furthermore, 25%-40% of the infertile women have endometriosis, and about 25% of the patients receiving in vitro fertilization (IVF) therapy have the condition (2). Endometriomas are treated differently depending on the symptom and infertility issue. The ovarian reserve is known to be impacted by standard cystectomies, making cystectomies a poor option for infertile women. Ethanol sclerotherapy (EST) is an interesting technique to improve IVF success rates in women with moderate-severe endometriosis, and it could be discussed before IVF in infertile women (3). The results of a study have indicated that EST does not improve intracytoplasmic sperm injection (ICSI) outcomes when performed right before ovarian stimulation and without concomitant GnRH analogue administration. Since it is a simple outpatient procedure without significant complications, an EST may be performed prior to IVF as an alternative to surgery to improve the accessibility of follicles and monitor the follicle growth in patients with large endometriomas and in patients with intractable pain symptoms, without decreasing the ovarian reserve (4). This case study aimed to report the evaluation of EST on IVF outcomes.

Case Report

In this study, the case of a 30-year-old Iranian woman with primary infertility for three years was reported. She was sent to a reproductive clinic in Tehran, experiencing three embryo arrests at the two-cell to four-cell stage during ICSI after two times of antagonist stimulation cycle with 150 unit of Cinnal-f and 150 unit of highly purified human menopausal gonadotropin (HP-hMG) as well as one cycle with minimal stimulation protocol with letrozole 2.5 mg/BD and 150 unit of hMG. Her menstrual cycle was regular, and her body mass index was 31.1 kg/m^2 (body weight, 73 kg).

Clinical Finding

The basal ultrasound revealed a normal uterus and endometriomas measuring 23 × 21 mm in the right ovary and 58 × 42 mm in the left ovary on transvaginal sonography (TVS) as well as a polycystic ovarian (PCO) pattern in the right ovary and 4 antral follicle count (AFC) in the left ovary.

Diagnostic Assessment

Her hysterosalpingogram revealed a normal uterine cavity and a normal patency of both tubes. The examination result of her partner's sperm was indicative of asthenospermia, and both couples' blood karyotypes were normal.

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Therapeutic Intervention

EST was selected for the patient due to her pelvic and abdominal discomfort as well as her infertility. The procedure was implemented under a general anesthesia, and puncturing and aspiration of the cyst was conducted using a 17-gauge needle under transvaginal sonography, with a sample of the cyst fluid submitted for cytologic analysis. This was done after she received 1 g IV metronidazole prophylaxis. The cyst was flushed with saline solution until a clear fluid was observed. The likelihood of the cyst rupture and intra-abdominal extravasation was decreased by injecting a 96% ethanol solution at 70% of the initial cyst volume. In order to avoid over-expansion of the cyst as well as prevent its rupture and ethanol leakage into the pelvis, ethanol at 96% was injected at 70% of the original volume of the endometrioma (in this example, 45 mL). Ethanol was then allowed to stay in the cyst for 10 minutes before being entirely aspirated (Figure 1).

Follow-Up and Outcomes

Eight weeks later, ovarian stimulation was started with minimal stimulation. On day two of the menstrual cycle, letrozole (2.5 mg BD) stimulation was performed for five days, and HMG *2 was started on day four of stimulation. The GnRH antagonist was given (Cetrotide) from day six of stimulation. Human chorionic gonadotropin (HCG) (5000 I.U.) was used as the trigger during the 9-day stimulation period when two 18 mm-diameter follicles and four 15 mm-diameter follicles were seen on ultrasound scans of both ovaries. Then six oocytes were retrieved, all of which were in metaphase 2 and were injected by sperm with normal morphology. Three embryos of good to intermediate quality (i.e., 9 cells, 8 cell A, and 6 cell B) were formatted (Figure 2).

After downregulation using a GnRH agonist (Zoladex 3.75mg), two to three-day embryos (9-cell A and 8-cell A) were transferred subsequent to the administration of estradiol and progesterone in a programmed frozen embryo transfer (FET) cycle. A positive beta-hCG test was obtained 14 days post-transfer.

The patient became pregnant and was 20 weeks pregnant with no complications at the time of this study.

Discussion

Endometriosis is a gynecological condition that usually affects women in their reproductive years, and is characterized by the development of endometrial glands and stroma outside the uterus. While it might be asymptomatic, it is associated with pelvic discomfort and infertility. When found in the ovary or between the ovary and ovarian fossa, ectopic endometrial tissue can grow into endometriotic cysts that are filled with old blood and are known as endometriomas. According to the reports, 30% of women seeking help for fertility issues have endometriosis (5). There is conflicting information on the effect of an endometrioma on the ovarian response during IVF. Studies have found that women with endometriomas, compared with women without endometriomas, have fewer oocytes and metaphase II (MII) oocytes (6). According to recent research, women with infertility due to endometriosis experience an outcome cycle similar to that of other assisted-reproductive technology (ART) patients. Before initiation of the treatment, doctors must consider the potential effects of surgical intervention on the ovarian reserve although its effectiveness and need are debatable (7,8), and surgery is still the most prevalent form of therapy provided to women with endometriomas. In a comprehensive review (5 controlled trials; n=655) (9), women with surgically removed endometriomas experienced similar clinical pregnancy (OR: 0.97; 95% CI 0.78-1.2), live birth (OR 0.9; 95% CI 0.63-1.28), and miscarriage rates (OR 1.32; 95% CI 0.66-2.65) following the IVF therapy. Women with surgically removed endometriomas also had a lower antral follicle count and required greater dosages of gonadotrophins to stimulate, even though the cancellation rates and the number of oocytes picked up were equal. Intriguingly, women having surgical management for a unilateral endometrioma, compared to women with the contralateral normal ovary, had fewer oocytes retrieved from the surgically-treated ovary ((mean difference −2.59; 95% CI: −4.13 to −1.05)), indicating a decrease in the ovarian reserve following

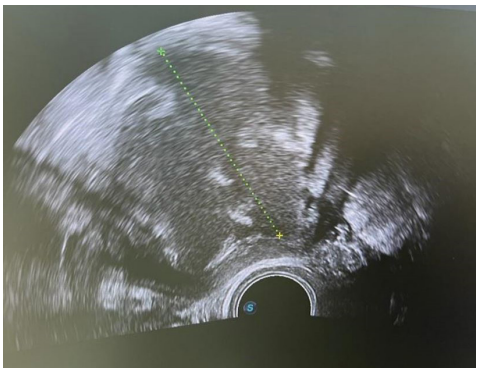

Figure 1. Endometrioma in Left Ovary Immediately After Sclerotherapy.

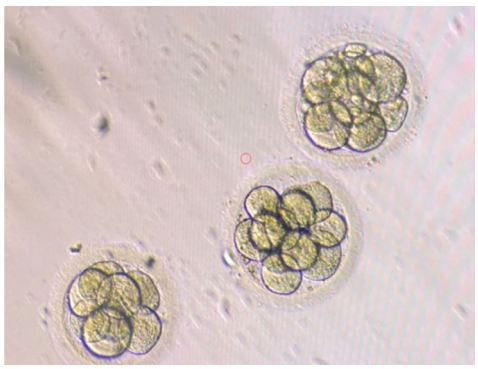

Figure 2. Three Formatted Embryos After Sclerotherapy (9 Cells, 8 Cell A, and 6 Cell B)

a surgical intervention, which was later reported by several other studies. The newest systematic review and meta-analysis comparing the clinical and pregnancy outcomes in surgery and sclerotherapy showed that despite sclerotherapy having a minor incidence of postoperative complications compared to surgery, the latter was associated with a lower rcurrence rate and a higher pregnancy rate. However, those data highlight the importance of a targeted therapy according to the preoperative conditions and reproductive potential (10).

Endometriomas with a diameter of 4 to 10 cm and no signs of cancer can be treated with ultrasound-guided aspiration and EST (11). This procedure may be provided to the individuals with endometriomas to preserve fertility (12). The method is often associated with a low risk of problems and an endometrioma recurrence, making it a potentially helpful therapeutic option for some patients (13).

Conclusions

It was concluded that EST may have been considered as a first-line therapy to treat infertility after the failure of IVF. It was also found that EST may have increased the number of oocytes and perhaps the quality of the embryo.

Authors' Contribution

Conceptualization: Saghar Salehpour, Parisa Taherzadeh, Nazanin Hajizadeh.
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Validation: Saghar Salehpour.
Visualization: Parisa Taherzadeh.
Writing–original draft: Nazanin Hajizadeh, Parisa Taherzadeh.
Writing–review & editing: Nazanin Hajizadeh.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

All steps and procedures of the study were followed in accordance with the ethical guideline and were explained to all participants, and a written informed consent was obtained from all participants.

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