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Adnexal torsion in early pregnancy after assisted reproduction: can the adnexa be saved?

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Summary

Adnexal torsion occurs when the ovary and fallopian tube twist on the axis created between the infundibulopelvic ligament and the utero-ovarian ligament. The symptoms are mostly unspecific and diagnosis is therefore not simple. Early diagnosis is essential to preserve organ function and fertility. The increased use of assisted reproductive technologies has led to an increase in the risk of adnexal torsion, particularly in pregnant women or women with ovarian hyperstimulation syndrome (OHSS). A gestational age eight-week pregnant woman who received in vitro fertilization (IVF) came to the clinic and was suspected of adnexal torsion. The patient underwent an operation and the biopsy histologically confirmed ischemia. Here the authors report a case with comparison to other studies, the early diagnosis, and early operation that could save adnexa.

Key words: Adnexal torsion; Early pregnancy; In vitro fertilization; Ovarian hyperstimulation syndrome.

Introduction

Adnexal torsion is a surgical emergency. The torsion of the ovarian vascular pedicle results in ischemia and rapid progression of lower abdominal pain [1]. However, abdominal pain is not a specific clinical symptom [1]. The true incidence is unknown because the diagnosis is made definitively only during surgery [2].

Torsion generally occurs in women with moderately enlarged ovaries, often in association with an ovarian cyst [2]. When a pregnant woman presents with pelvic or abdominal pain, adnexal torsion must be considered; it is estimated that 12–25% of women with torsion are pregnant [3]. Although more common in the first and early second trimesters of pregnancy, adnexal torsion may occur at any gestational age [3]. The increased use of assisted reproductive technologies such as controlled ovarian hyperstimulation (COH), *in vitro* fertilization (IVF), and intracytoplasmic sperm injection (ICSI) has led to an increase in the risk of adnexal torsion [4]. OHSS resulting from IVF in sterile women is considered a predisposing condition to ovarian torsion [1].

The patient was an eight-week pregnant woman who suffered from infertility for three years and received successful IVF. She was diagnosed with adnexal torsion with enlarged ovaries due to OHSS. The symptom duration to the operation was two days, and the authors failed to preserve the right adnexa of the patient.

Case Report

A 29-year-old woman with diagnosis of primary infertility three years earlier underwent ovarian stimulation for IVF. Eight weeks after embryo transfer, she reported intense right lower quadrant abdominal pain, with no fever during 36 hours prior. The pregnancy test was positive with b-hCG at 199,711 mIU/ml, with no sign of leukocytosis. Transvaginal ultrasonography showed single, uterine pregnancy with a live embryo measuring 11.1 mm crown-rump length (CRL), compatible with 7.1 weeks (Figures 1a, b). Right ovary were enlarged which showed cystic images larger than 8.0 cm suggesting OHSS, along with several smaller follicles along its periphery (Figure 2a). Through color Doppler, flow asymmetry could be observed, with reduction of arterial flow (Figure 2b). Given these findings, the diagnostic hypothesis of right ovarian torsion due to OHSS was considered. Eight hours later, she received an operation. During laparotomy, right ovary were visibly enlarged, confirming the diagnosis of OHSS. The right ovary and fallopian tube were twisted with two turns; the ovary had ischemic aspect (bluish) (Figures 3a, b). Histopathologic result revealed right ovary with a luteinized cyst with hemorrhage (Figure 4). The woman was discharged four days after operation, with no complication and she was followed-up in the authors' clinic.

Discussion

Adnexal torsion is a true gynecologic emergency and accounts for approximately 3% of all gynecologic surgical emergencies [3]. Although benign ovarian cysts are the most common cause of adnexal torsion, more than half of torsions do not involve an ovarian neoplasm [3]. Torsion occurs more commonly on the right than on the left, with an incidence of approximately 3:2 [2]. This is likely due to the proximity of

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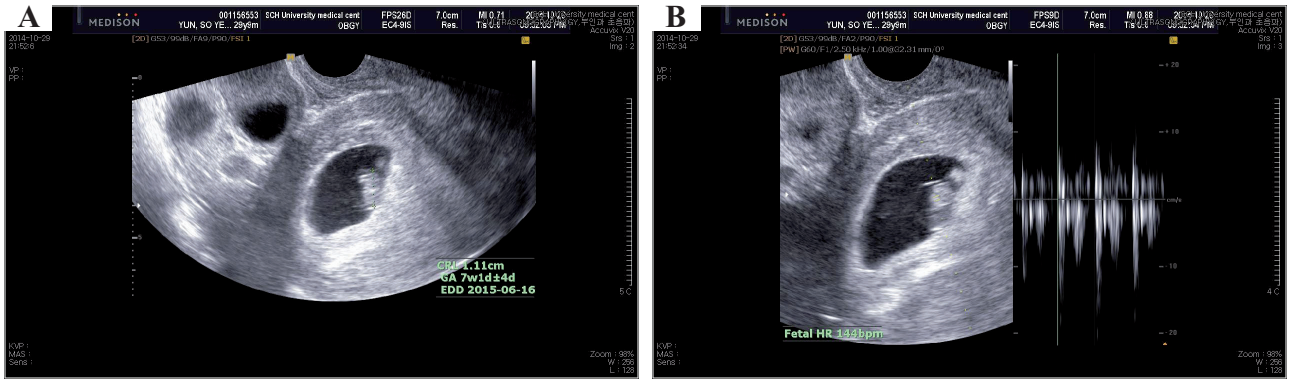

Figure 1. — (a) single, uterine pregnancy measuring 11.1 mm crown-rump length (CRL), compatible with 7.1 weeks. (b) A live embryo with active heart beat (144 bpm).

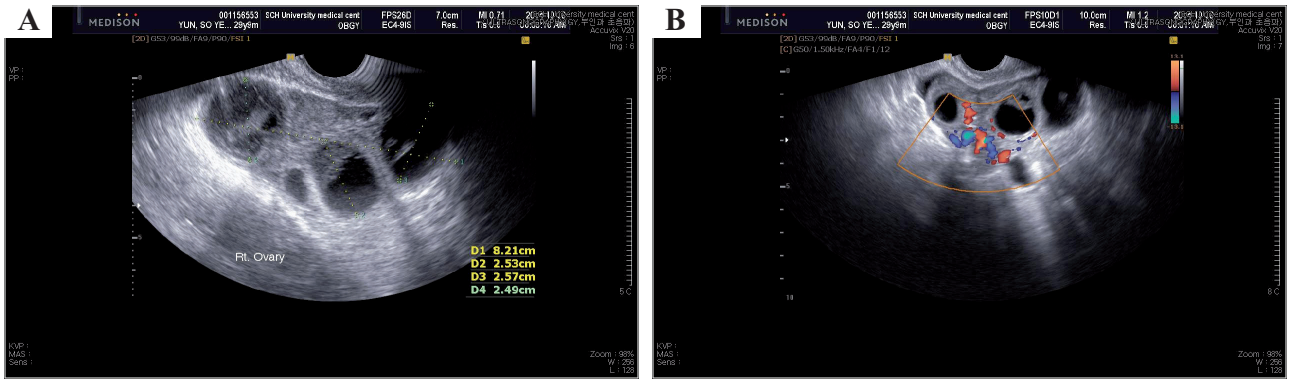

Figure 2. — (a) Right ovary is enlarged, larger than 8.0 cm suggesting OHSS. (b) Color Doppler showed flow asymmetry is observed, with reduction of arterial flow.

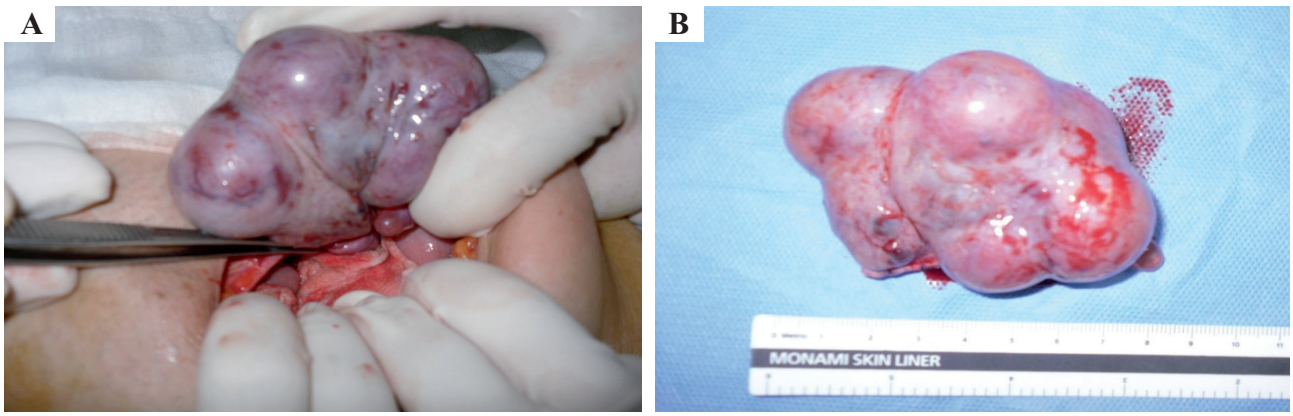

Figure 3. — (a) The right ovary and fallopian tube are twisted with two turns and the ovary has an ischemic aspect (bluish). (b) Right salpingo-oophorectomy is performed.

the left ovary to the relatively fixed sigmoid colon, compared to the hypermobility of the cecum and ileum on the right [2].

When a pregnant woman presents with pelvic or abdominal pain, adnexal torsion must be considered; it is estimated that 12–25% of women with torsion are pregnant [5]. Although more common in the first and early second trimesters of pregnancy, adnexal torsion may occur at any gestational age [3].

Torsion symptoms are similar for both nonpregnant and pregnant patients including lower abdominal pain that is acute or chronic, intermittent or constant, and often associated with nausea and emesis [5, 6]. If adnexal torsion is not promptly identified and surgically managed, the risks of this delay include loss of ovarian function, ovarian necrosis, and oophorectomy [7].

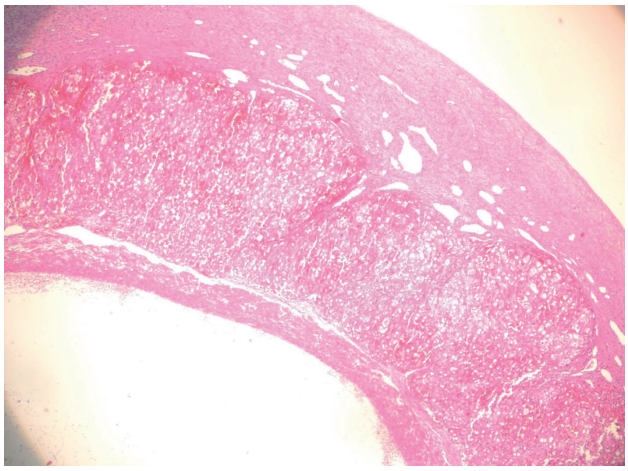

Figure 4. — Histopathologic view shows hemorrhage of right ovarian tissue (H&E, x100).

OHSS are associated with an increased risk of adnexal torsion [5]. Enlarged cystic ovaries because of ovarian stimulation, especially when complicated by OHSS, are predisposed to torsion [5]. OHSS further complicates the clinical presentation of torsion because the abdomen is already distended and tender because of the enlarged cystic ovaries [5].

The ability to diagnose adnexal torsion has improved with widespread use of pelvic ultrasonography with Doppler evaluation [5]. Two-dimensional Doppler sonography has been suggested as a way to detect the absence of blood flow to a torted ovary, thereby aiding in the diagnosis and early treatment of ovarian torsion [8]. The absence of color Doppler flow in the ipsilateral side indicates the possibility of complete ovarian torsion [8]. When using 3D transvaginal ultrasound examination, it is important to visualize the region of interest in the longitudinal axis in order to obtain the real 3D volume [8]. However, this is not always possible [8]. The size of the scan angle does not always allow acquisition of the entire organ [8].

Adnexal torsion is a surgical emergency, and the most common method of treatment is laparoscopy [2]. The first general rule is to detorse the adnexa [2]. It was previously thought that untwisting the torsed adnexa could cause showering of vascular emboli, and thus most torsion was managed by removing the adnexa without untwisting it [9]. However this is not true by several studies [10, 11].

There are conservative and definitive options for treatment. Age, future fertility, menopausal status, and evidence of ovarian disease are all factors considered in the management decision [2]. Conservative treatment includes only untwisting the adnexa and confirming viable adnexal tissue, untwisting the adnexa, and aspirating any associated cyst, or untwisting and removing any associated cyst [2]. Due to the edema caused by torsion, some recommend simple detorsion of the ovary and postoperative follow-up with serial ultrasound scanning to determine whether cystectomy is necessary [12].

It is stated that adnexal ischemic change occurred after 36 hours of adnexal torsion, although the risk of thrombus does not increase [13]. The present authors failed to save the patient's ovary which already became ischemic after 44 hours of torsion.

In conclusion, in case of a patient suspecting ovarian torsion who complains of lower abdominal pain, it is crucial to perform prompt diagnostic laparoscopic operation and detorsion and cystectomy.

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