Fetal Ovarian Cysts Diagnosed During Prenatal Ultrasound Screening

K. Emre Karaşahin, Kazım Gezginç*, Mustafa Ulubay, Ali Ergün

Department of Obstetrics and Gynecology, Gulhane Military Medical Academy, Ankara, Turkey.

SUMMARY

Objective: To discuss the follow-up and management of fetal ovarian cysts (FOCs) and review the current literature.

Case Report: A 26-year-old, gravida 2, para 0, abortus 1, Rh-negative patient was diagnosed with bilateral FOCs during ultrasound examination at 32 weeks' gestation. Fetal nuchal translucency measured at 12 weeks' gestation was 1.2 mm, and a combined triple test for trisomy 21 suggested a 1/800 risk. She was regularly monitored at our antenatal outpatient clinic, and the course of her pregnancy was uncomplicated until 32 weeks' gestation, when bilateral FOCs were diagnosed. Because of cephalopelvic disproportion, a cesarean section was performed at 39 weeks' gestation and a 3,680-g Rh-positive female baby was delivered. The baby was admitted to the neonatal care unit and was monitored by pediatricians. Ultrasound examination in the second postpartum month revealed spontaneous regression of the bilateral ovarian cysts.

Conclusion: Although FOCs are not usually life-threatening, the risk of losing the ovaries due to torsion during the neonatal period and the resulting sexual development disorders and infertility are very disturbing. [*Taiwan J Obstet Gynecol* 2008;47(2):215–217]

Key Words: fetal ovarian cyst, follow-up, management, ultrasound screening

Introduction

FOCs were first described by Valenti et al [1] in 1975 and have apparently increased in incidence, most likely because of the recent extensive use of ultrasound in prenatal diagnosis. FOCs are reported in 30% of neonatal autopsies [2]. Following renal and gastrointestinal etiologies, FOCs are known to be the third most common cause of antenatally diagnosed intra-abdominal cysts [2]. Small cysts are frequently found in neonatal ovaries and are accepted as normal, while cysts of > 2 cm in diameter are considered to be pathologic [3]. The relatively low incidence of FOCs in autopsies probably reflects the selection of clinically or sonographically complicated cases, and those with poor outcomes. We present a case of FOCs diagnosed during prenatal ultrasound screening and discuss its follow-up and management as well as review the literature.

Case Report

A 26-year-old, gravida 2, para 0, abortus 1, Rh-negative patient was diagnosed with bilateral fetal ovarian cysts (FOCs) during ultrasound examination at 32 weeks' gestation. The fetal biophysical profile score was 10/10 and biometric measurements were appropriate for the gestational age. A single vertical amniotic fluid pocket was measured and had a diameter of 5 cm. Fetal nuchal translucency measured at 12 weeks' gestation was 1.2 mm, and a combined triple test suggested a 1/800 risk of trisomy 21. She was screened for fetal anomalies at 20 weeks' gestation, and a fetal echocardiogram was performed. The results of both tests were reported to be normal. She was followed up at our antenatal outpatient clinic regularly, and no complications were recorded until 32 weeks' gestation, when she was diagnosed with bilateral FOCs.

Correspondence to: Dr Kazım Gezginç, Department of Obstetrics and Gynecology, Gulhane Military Medical Academy, 06018 Etlik, Ankara, Turkey.
E-mail: kazimgezginc@hotmail.com
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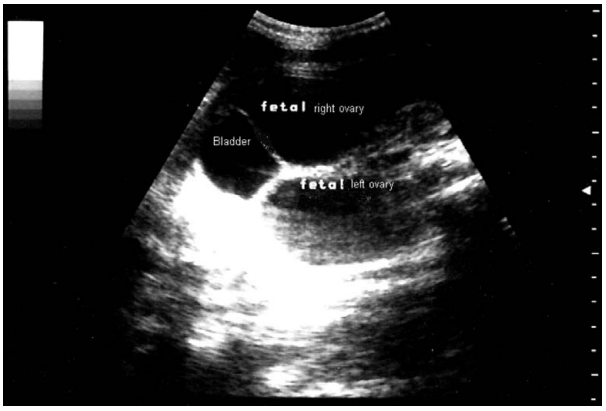

Figure. Bilateral fetal ovarian cysts.

The maximum diameters of the two cysts were 50 mm and 40 mm, and they were clearly identified as being separate from the fetal bladder and kidneys (Figure).

Because of cephalopelvic disproportion, cesarean section was performed at 39 weeks' gestation and a 3,680-g, Rh-positive female baby was delivered. The 1- and 5-minute Apgar scores were 8 and 10, respectively. Umbilical artery blood pH was 7.37. The mother was given anti-D immunoglobulin for Rh immunization, and the baby was admitted to the neonatal care unit and was monitored by pediatricians. Ultrasound examination in the second postpartum month revealed spontaneous regression of the bilateral ovarian cysts in the baby.

Discussion

Maternal diabetes, toxemia of pregnancy and Rh disease all increase the risk of fetal ovarian enlargement and cyst formation [2,4,5], and the cysts might therefore be expected to regress after delivery. Reports in the literature suggest that these cases are associated with congenital hypothyroidism [6]. Antenatal diagnosis of FOCs has been increased by the widespread use of ultrasound screening, with the diagnosis usually being made at around 31–32 weeks' gestation [6,7], though a case has been reported at 19 weeks [2]. FOCs are usually asymptomatic, but large cysts may present with complications. Generalized peritonitis following the rupture of a cyst is possible, as is the occurrence of intestinal obstruction caused by the development of inflammatory adhesions between the necrotic, cystic material and the intestines. However, spontaneous regression of FOCs has also been described [8,9].

In this patient, no increase in cyst diameter was detected after its initial diagnosis, despite frequent antenatal monitoring visits, and we therefore believed that spontaneous regression of the cyst was possible [8]. Results of neonatal thyroid function tests were normal.

When an intra-abdominal cyst is found in a female fetus, the possible differential diagnoses of urachal cyst, intestinal duplication abnormalities, and mesenteric cysts should be kept in mind [10,11], even though these pathologies are very rare. Ultrasonography may be of limited use in arriving at a definitive diagnosis, although a duplication cyst appears as a hypoechoic muscular layer surrounding a hyperechoic mucosal layer and tends to be more tubular or ovoid in shape than the other lesions. The location (generally in the midline) and extension to the umbilicus are helpful features for the differential diagnosis of urachal cysts [10]. A large and overdistended bladder or dilated intestinal loops can mimic FOCs. Mesenteric cysts usually occur in the mid-abdominal region and are characteristically observed to be mobile on ultrasound examination [11]. In gastrointestinal abnormalities, concomitant fetal ascites or polyhydramnios may also be present. It is also important to bear in mind the possibility of other abnormalities [6].

FOCs are usually considered to be benign. When a possible FOC is detected, serial ultrasound measurements should be made to determine its size and direct its management. A normal cyst has a smooth cyst wall with a uniform interior. Even though torsion of a cyst is not associated with any specific sign, associated bleeding inside the cyst can be seen as heterogeneous internal septations [2,12].

Fetal and neonatal ovarian cysts can cause gastrointestinal obstruction or perforation, ascites, cyst rupture, and torsion. Adnexal torsion is the most serious complication, occurring in 38–55% of cases [8,12,13]. Torsion requires surgical investigation and although the aim is always to save the ovary, an oophorectomy or salpingo-oophorectomy may sometimes be essential. At ultrasonographic follow-up, a transition from a simple, thin, smooth-walled cyst to a complex cyst with internal septation may indicate torsion [2,14,15].

In adults, the diagnosis of torsion is made clinically, because Doppler measurements of ovarian blood flow cannot rule out the presence of torsion. Clinical history taking with concomitant use of ultrasound is used to diagnose torsion in only 66% of adults [16].

Clinical examination is not possible during the fetal and neonatal periods, and specific criteria are needed to confirm or rule out ovarian torsion. Although FOCs of >5 cm in diameter are accepted as having higher chances of complications, some authors suggest that ovarian torsion risk is independent of cyst size. Measuring the cyst pedicle rather than the overall cyst size has been reported to be useful in determining the prognosis.

Giorlandino et al [17] reported an 85% postpartum oophorectomy rate when FOCs of > 5 cm in diameter were not aspirated *in utero*. Bagolan et al [18], however, calculated the oophorectomy risk to be only 14% when intrauterine aspiration of FOCs of > 5 cm in diameter was performed. Intrauterine aspiration of simple FOC of > 5 cm in diameter is therefore recommended [18].

However, even though maternal and fetal outcomes following aspiration are good, some complications have been reported; ultrasonographic diagnosis of FOCs is not definitive, and percutaneous aspiration of hydroureters, mesenteric cysts and urachal cysts may increase fetal morbidity and mortality. Perforation of the fetal membranes during the procedure may increase the risk of preterm labor and delivery, and intrauterine infection and injury to major fetal blood vessels is possible. The experience of the perinatologist performing the cyst aspiration is therefore critical, to minimize fetal morbidity and mortality.

If ultrasonographic postnatal follow-up shows cysts of > 5 cm in diameter that do not regress spontaneously and/or if complications are suspected, a laparotomy is suggested. If spontaneous resolution of the cyst is evident or complications are not apparent, follow-up is usually sufficient [19].

The timing and the method of delivery are controversial in cases of FOCs when torsion is suspected. Ultrasonographic diagnosis of torsion is not very precise, but if there is even a suspicion of torsion, elective delivery is considered to be more likely to preserve ovarian function in fetuses with bilateral FOCs at or near term, or with confirmed lung maturity.

Postpartum spontaneous resolution of FOCs may reasonably be expected to occur once the circulating hormone levels affecting the fetus fall. Because of the difficulty in establishing a definitive diagnosis, we recommend serial ultrasonographic monitoring along with a "wait-and-see" approach for fetuses without fully mature lungs. Our advice is to plan for the delivery to take place in a tertiary care center, where the necessary facilities are available in case a fetal surgical approach is required. Some authors recommend cesarean delivery, while others suggest that vaginal delivery is safe, and no case of FOC rupture during vaginal delivery has yet been reported.

Fortunately, FOCs are not usually life-threatening, but the risk of losing the ovaries due to torsion during the neonatal period and the resulting sexual development disorders and infertility are very disturbing. The risk of torsion should always be considered, even though spontaneous resolution of these hormone-dependent ovarian cysts after delivery is the usual course.

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