CASE REPORT

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Prenatal diagnosis and postnatal management of fetal ovarian cysts

Quiste de ovario fetal, diagnóstico prenatal y manejo posnatal

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ABSTRACT

Ovarian cysts in the fetus are the tumors most frequently detected in the prenatal stage. They are diagnosed by ultrasound during the third trimester at the abdominal level as an anechoic, unilocular image, in which the sign of the 'daughter cyst' may be present. Differential diagnosis must be made with other intra-abdominal cystic lesions. The size of the cyst, the ultrasound characteristics and the presence of symptoms or complications will be the determining factors for perinatal management, which includes conservative management, prenatal aspiration of the cyst and postnatal surgery. We report the case of a 30-week pregnant woman with a female fetus who presented an abdominal cyst dependent on an adnexum which during the course of her ultrasound controls showed an increase in size and a change in the ultrasound pattern. During the postnatal stage, surgical management via laparoscopy was required, with favorable evolution and follow-up by outpatient clinic without complications.

Key words: Ovarian cysts, Prenatal diagnosis, Ultrasonography, Ovarian torsion

RESUMEN

Los quistes de ovario en el feto son las tumoraciones que se detectan con mayor frecuencia en la etapa prenatal. Se diagnostican ecográficamente durante el tercer trimestre a nivel abdominal como una imagen anecogénica, unilocular, en la que puede estar presente el signo del 'quiste hijo'. Se debe realizar el diagnóstico diferencial con otras lesiones quísticas intraabdominales. El tamaño del quiste, las características ecográficas y la presencia de síntomas o complicaciones serán los determinantes para el manejo perinatal, en la que se incluye el manejo conservador, la aspiración prenatal del quiste y la cirugía posnatal. Se comunica el caso de una gestante de 30 semanas con feto femenino que presentó un quiste abdominal dependiente de anexo que en el transcurso de sus controles ecográficos mostró un incremento en el tamaño y un cambio en el patrón ecográfico. Durante la etapa posnatal requirió de un manejo quirúrgico vía laparoscópica, con evolución favorable y seguimiento por consultorio externo sin complicaciones.

Palabras clave. Quistes ováricos, Diagnóstico prenatal, Ultrasonografía, Torsión ovárica

Introduction

Fetal ovarian cysts are the most frequently detected intra-abdominal tumors during the prenatal period, with an incidence of 1 in 2,600 pregnancies[1].

There is controversy as to pathophysiology. It is postulated that ovarian cysts originate from exposure of the fetal ovary to increased levels of maternal estrogen, fetal gonadotropin and placental human chorionic gonadotropin[2]. Because of this hormonal stimulation most cysts are functional, asymptomatic, benign, and those measuring <4 cm may resolve spontaneously during pregnancy or after birth[1].

Cases of fetal ovarian cysts associated with diabetes mellitus, preeclampsia, hypothyroidism and Rh immunization have been published; larger studies are required to verify this association[3-5].

Diagnosis is made by ultrasound, usually during the third trimester. In female fetuses a cystic structure is observed, unilocular, circumscribed in the abdomen, with integrity of the urinary and gastrointestinal systems[3,6]. A noteworthy ultrasound finding is the presence of the 'daughter cyst'

sign, which is an anechoic, rounded structure of 2-8 mm that can be found inside or outside the main cyst[7]. This 'daughter cyst' may correspond to a developing intraovarian follicle, so this sign may be useful for the diagnosis of ovarian cyst[8]. Generally, the cysts are unilateral, and occasionally bilateral cysts have been reported[9,10].

According to ultrasound characteristics, they are classified into 2 types. Simple cysts are anechoic, unilocular, smooth-walled and thin-walled. Complex cysts are heterogeneous, multiloculated, thick-walled, with echogenic components, solids and internal septa[11]. Complex cysts are usually secondary to intracystic hemorrhage or ovarian torsion[3].

It has been observed that cysts ≥4 cm and/or complex cysts can cause severe complications in the fetus, such as ovarian torsion or necrosis that in some cases originate fetal tachycardia due to peritoneal irritation. Spontaneous rupture of the cyst, ascites, polyhydramnios and compression of neighboring structures have also been reported[2,10].

Although cysts are not associated with genetic or structural anomalies, it is recommended to perform a complete ultrasound evaluation of the fetal anatomy and to make the differential diagnosis with abdominal cystic lesions of genitourinary, gastrointestinal or lymphatic origin. Additionally, prenatal MRI could be used to exclude these lesions[5,12].

It should be mentioned that the optimal treatment of fetal ovarian cysts is uncertain. Options include conservative management, prenatal cyst aspiration and postnatal cystectomy. In addition, the timing and route of delivery should not be conditioned by the presence of an ovarian cyst, as spontaneous vaginal delivery is possible, and cesarean section will be reserved according to obstetric indications[3,4,13].

We describe the case of a 30-week pregnant woman diagnosed with a fetal ovarian cyst and postnatal laparoscopic surgical treatment without complications and with a favorable outcome.

Case report

The case is described of a 28-year-old patient, secundigesta, with previous vaginal delivery, with no pathological or surgical history of interest. She had 4 prenatal controls at a health center with laboratory tests within the normal range and blood group O Rh positive. She had ultrasound for screening of aneuploidy in the first trimester and morphological ultrasound at 22 weeks without alterations.

She was referred to the hospital at 30 weeks of gestation for obstetric ultrasound, which showed singleton pregnancy with 145 beats per minute, estimated fetal weight of 1,510 g, in the 58th percentile for gestational age, amniotic fluid in normal volume and anterior body placenta. At the right lateral level of the fetal abdomen, in an oblique plane, a unilocular anechogenic image of 25.9 x 21.4 mm with regular borders was observed, without the presence of solid parts in its interior, nor vascular on color Doppler. This cyst was located below the ipsilateral kidney and above the bladder (Figure 1). On coronal view, the kidneys were ultrasonographically normal. The fetal sex was female (Figure 2), and the rest of the anatomical evaluation showed no structural alterations. Therefore, the diagnosis of a right ovarian cyst was made, and ultrasound controls every 3 weeks were suggested without significant changes found.

However, at 39 weeks of pregnancy it was observed that the cyst had dimensions of 44 x 23 mm, with a multiloculated appearance, thick walls, internal septa (Figure 3), without the presence of ascites and with amniotic fluid volume in normal range.

One week later she went to the emergency room for uterine contractions and a vaginal delivery took place, in which a female live newborn was obtained, 3,390 g, Apgar 9 at one minute and 9 at 5 minutes.

On physical examination of the newborn, a soft tumor was palpated at the level of the right hemiabdomen. An abdominal ultrasound showed an intra-abdominal cyst measuring 4 x 2 cm with the presence of septa. She was evaluated by pediatric surgery and at the moment she did not require surgical management, with follow-up in 1 month.

On control examination, the neonate was irritable, with a tendency to cry, weak sucking and distended abdomen. A laparoscopic cystectomy was scheduled. A 7 x 5 cm grayish smooth-walled tumor was observed, dependent on the right

Figure 1. Fetus at 30 weeks, showing the oblique plane of the fetal abdomen. Unilocular cyst (+) is seen below the right kidney (#) and above the bladder (*).

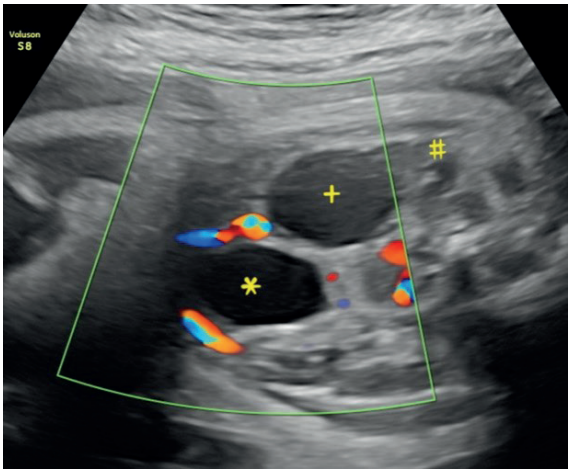


Figure 2. Coronal section shows ultrasonographically normal kidneys (A) and female sex (B).

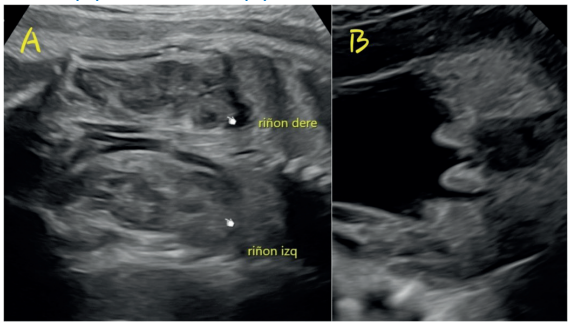
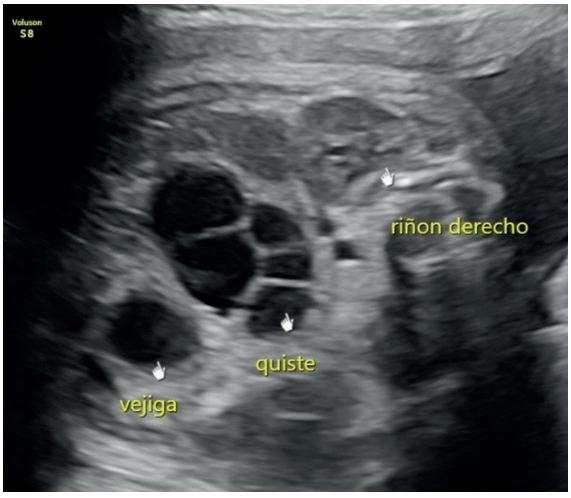


Figure 3. Fetus at 39 weeks; multiloculated cyst of internal walls and septa is observed.



adnexa with a twisted pedicle. The contralateral adnexa showed no alterations. The surgical procedure culminated without complications with favorable evolution, so she was discharged after 72 hours. Subsequently, she was followed up in the outpatient clinic, presenting good general condition.

Discussion

The ovary is an abdominal organ that is inactive in the female fetus, and it has been proposed that hormonal stimuli may develop ovarian cysts[2].

Ultrasonographic evaluation during the prenatal stage has allowed increased diagnosis. Chen[6] reported that 87.2% of cases can be detected after 28 weeks of pregnancy. With a maximum diameter between 12 mm and 66 mm, 94.1% were unilateral and 5.9% bilateral. In our case, the diagnosis was made in the third trimester of pregnancy. It was a right unilateral cyst that reached a maximum diameter of 44 mm.

In the natural course of the ovarian cyst, the maximum diameter provides relevant information on the possibility of regression without complications[3]. Therefore, the literature recommends using 4 cm as the cut-off point[1]. Based on this, Akalin[10] showed that the prenatal resolution rate in cysts <4 cm was 66.7% in contrast to 33.7% in cysts ≥4 cm. On the other hand, it is important to highlight the ultrasound characteristics of the cyst and, according to Nussbaum[11], cysts can be grouped into simple and complex. This will allow us to assess the presence of complications that could cause ovarian damage in the newborn.

A potential serious complication in the fetus is ovarian torsion which can be observed in 21.8% of cases, of which 44.9% are due to complex cysts[1]. Once the cyst is detected, studies recommend ultrasound controls; however, the frequency is not established[6,14,15]. In the case reported, during the ultrasound evaluations it was observed that the cyst had an increase in size and a change in the ultrasound pattern. These changes can occur during or after pregnancy in up to 12% of cases, which coincides with the findings of Chen[6] and Galinier[9]. It is therefore recommended to perform ultrasound follow-ups even after birth to plan management.

It should be noted that ovarian cysts detected by ultrasound have a false positive rate of 7.5%[1]. Therefore, in the presence of an abdominal cyst, a differential diagnosis should be made with the main intra-abdominal pathologies summarized in Table 1[2,12,16].

As for management, there is no established consensus. The choice of therapeutic

Table 1.

Type of cyst	Location	Ultrasound characteristics
Enteric duplication cysts	Ileocecal region	Round or tubular cyst with echogenic content and characterized by the double wall sign
Common bile duct cysts	Right upper quadrant in the intestinal hepatic hilum region	Cystic or fusiform dilatation of the extrahepatic ducts
Meconium pseudocysts	Intestinal	Cystic mass with contents and echogenic wall that sometimes shows calcification foci
Renal cyst	Posterior position adjacent to the vertebral column	Unilocular cyst in the renal parenchyma, it is not septate and does not communicate with the renal pelvis
Multicystic dysplastic kidneys	Renal fossa near the spine	Multiple cysts of different sizes that do not communicate with each other
Urachal cyst or remnant	Anterior midline of the abdomen	Anechoic structure adjacent to or separate from the bladder
Hydrocolpos	Midline	Large, thin-walled, echogenic cystic structure. The bladder is displaced anteriorly or empty due to extrinsic compression
Lymphangioma	In the abdomen, most are found in the mesentery	Large, thin-walled, multilocular anechoic cyst with multiple septa

Differential ultrasound diagnosis of abdominal cysts.

options should be based on size, ultrasound characteristics and the presence of symptoms or complications both prenatally and postnatally[17]. As previously mentioned, a cyst <4 cm may be a candidate for expectant management because it has a high rate of resolution[10]. Prenatal aspiration is a minimally invasive procedure used to reduce cyst size. However, controversial results are published due to complications[4]. Finally, postnatal surgical management aims to preserve ovarian tissue as much as possible, which will be indicated in persistent, symptomatic, complex cysts and cysts >5 cm or with progressive increase in size. This can be performed via laparotomy or laparoscopy, including aspiration, fenestration, excision of cysts and oophorectomy[18-20]. In the case presented, expectant management was performed during the prenatal course. However, in the postnatal stage the cyst increased in size and was associated with symptomatology, so laparoscopic cystectomy was performed.

In conclusion, the ovarian cyst in the fetus is the most common abdominal tumor detected by ultrasound during the third trimester of pregnancy. It can be classified into simple and complex cysts. The size, ultrasound characteristics and the presence of symptoms or complications will be the determinants for perinatal management. Most of these cysts may resolve spontaneously. However, some will require postnatal surgical treatment.

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