Prenatal Diagnosis and Clinical Outcome of Ovarian Cysts

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● Technical refinements of ultrasound (US) have greatly affected the antenatal diagnosis and treatment of ovarian cysts. From 1985 to 1990 25 consecutive fetuses with ovarian cysts were followed-up by US both during pregnancy and postnatally. All cases were diagnosed between the 28th and 39th weeks of gestation. Deliveries were all at term; cesarean section was required only for obstetric complications. Eight fetuses (32%) showed US patterns of cyst torsion, a finding confirmed at surgery in all. In five patients US patterns suggested complications postnatally that were also confirmed at operation. In six cases cysts increased or remained unchanged in size after 15 days of life: in 50% of these surgery showed ovarian torsion. In the remaining six cases spontaneous resolution occurred within 1 to 4 months. One patient required intrauterine needle aspiration. There were two cases of intestinal obstruction. To date, more than 60% of newborns with ovarian cysts require oophorectomy; however, different treatments (cystectomy, needle aspiration, uncapping) combined with a close US follow-up are likely to reduce this percentage.

INDEX WORDS: Ovarian cyst, antenatal diagnosis, fetal ultrasound.

SINCE THE first antenatal description of an ovarian cyst made by Valenti in 1975, technical refinements in ultrasound (US) have increased the frequency of the diagnosis.[1] This has raised problems for the surgeon regarding antenatal and postnatal treatment. Until recently most authors have recommended early surgery in all newborns with ovarian cysts.[2,3] More recently, the importance of conservative treatment has been stressed.[1,4,5] Both options have disadvantages: gonadal loss in the former, and life-threatening complications in the latter. This retrospective review was undertaken to assess the appropriate therapeutic approach based on antenatal and postnatal US patterns.

MATERIALS AND METHODS

Twenty-five consecutive cases of ovarian cysts, observed between January 1985 and December 1990, were reviewed retrospectively. They had been diagnosed between 28 and 39 weeks of gestation (mean, 34 weeks). Sonographic evidence of female sex, cystic abdominal mass, and the absence of urinary, gastrointestinal, and vertebral anomalies suggested the antenatal diagnosis of ovarian cyst. To detect any changes the cysts were followed by repeated US examination every 2 weeks during the rest of pregnancy. Antenatally detected ovarian cysts were classified depending on: (1) appearance (simple cysts, anechoic with thin rim; or complicated cysts, either with septa or fluid/debris or calcification [Fig 1]); and (2) size (increasing, constant, or decreasing). All newborns underwent postnatal ultrasound between the first and the 30th day of life and were reassessed. Surgical exploration was undertaken for: (1) complicated cysts, both antenatally and postnatally, irrespective of their change in size; (2) ovarian cysts leading to surgical complications, eg, intestinal obstruction; and (3) simple cysts, increased or unchanged in size after the 15th day of life. Surgical intervention consisted in all cases of oophorectomy sometimes with adnexectomy; contralateral polycystic ovaries were treated by needle aspiration.

All newborns treated conservatively were followed sonographically every 10 days during the first month of life. Long-term follow-up included clinical and US examinations.

RESULTS

This series deals with 26 ovarian cysts in 25 consecutive patients, 18 on the right, 6 on the left, and 1 bilateral. All patients were delivered at term with a birth weight ranging from 2.9 to 4.0 kg (mean, 3.4 kg) without associated anomalies. Pregnancy was uncomplicated in 20 cases, whereas 5 cases showed some complications which were managed by medical therapy.

The main features of the ovarian cysts are shown in Table 1. Eight of 25 cases (32%) showed antenatal US patterns of complicated cysts (3 septa, 5 fluid/debris levels); all required surgical intervention after birth (including one case with intestinal occlusion). In all cases the operative findings and histology confirmed the sonographic diagnosis.

In five cases the US appearances became complicated postnatally (4 fluid/debris levels, 1 septa). They were operated on and ovarian torsion was confirmed in all cases.

Of the 12 remaining "simple cysts," 6 remaining unchanged or enlarged after the 15th day of life were operated on. Three cysts were follicular and 3 showed evidence of torsion. Six cases with 7 cysts (one bilateral) remained simple and decreased in size both during pregnancy and on close postnatal follow-up. Spontaneous resolution occurred within a mean of 2 months (range, 1 to 4 months), 2 of these cases needed surgical intervention (intrauterine drainage in one and uncapping in the other). Needle aspiration

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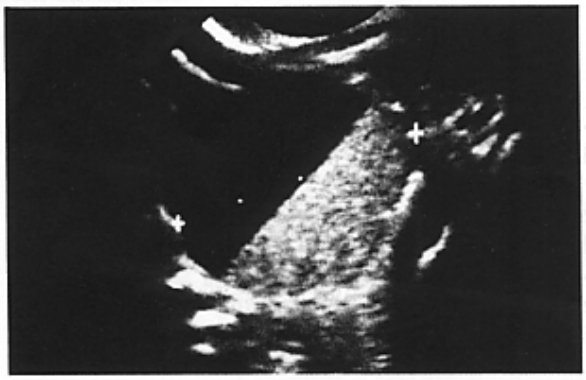

Fig 1. US pattern of ovarian cyst: fluid debris.

of a polycystic contralateral ovary was performed in 14 of 19 surgically explored cases.

DISCUSSION

Ovarian follicles are a common finding in the newborn with an incidence of 32% to 34%.[6] With the refinements in US, neonatal pathological cysts (larger than 2 cm), are more frequently encountered than in the past.[1,4,7] The origin of these cysts is far from clear and appears different in premature infants from the full term.[8,9] Maturation of the hypothalamus-pituitary-ovarian axis (gonadostat)[10] takes place during the last weeks of fetal life in the presence of high levels of estrogens.[9] At birth, when maturation is complete in the full-term newborn, even very low levels of circulating estrogens may affect the axis with a negative feedback mechanism.[9] Incomplete maturation of the axis and placental insufficiency are perhaps responsible for gonadal hyperstimulation in full-term neonates.

Since 1985 all cases of ovarian cysts have been diagnosed antenatally and all deliveries have been at term. In two cases the differential diagnosis included mesenteric and choledochal cysts.

Operation should be limited to "pathological" cysts. Within these, a distinction between simple and complicated is made on sonographic patterns.[11,12] In the present series these patterns were predictive of

Table 1. Antenatal and Postnatal Features of 26 Ovarian Cysts

Patient No.	Antenatal Size (mm)	Antenatal US Pattern	Postnatal Size (mm)	Postnatal US pattern	Size Evolution	Histology	Contralateral Ovary	
							Surgery	Follow-Up
Antenatal complications								
1	43 × 43	Debris	40 × 40	Debris	=	Necrosis	Mul.C.	Normal
2	40 × 40	Debris	45 × 45	Debris	≫	Necrosis	Mul.C.	Normal
3*	53 × 46	Septae	50 × 40	Septae	=	Necrosis	Mul.C.	Normal
4	40 × 40	Debris	40 × 40	Debris	=	Necrosis	Mul.C.	Normal
5	45 × 50	Debris	50 × 50	Debris	=	Necrosis	Mul.C.	Normal
6	70 × 70	Septae	40 × 30	Septae	≪	Necrosis	Mul.C.	Normal
7	40 × 40	Septae	45 × 40	Septae	=	Necrosis	Mul.C.	Normal
8	45 × 50	Debris	60 × 60	Debris	≫	Necrosis	Mul.C.	Normal
Postnatal complications								
9	65 × 70	Anechoic	70 × 70	Debris	=	Necrosis	Mul.C.	Follic
10	50 × 60	Anechoic	50 × 50	Debris	=	Necrosis	Normal	Normal
11	75 × 70	Anechoic	90 × 80	Debris	≫	Necrosis	Normal	Normal
12	40 × 40	Anechoic	45 × 40	Septae	=	Necrosis	Normal	Normal
13	50 × 50	Anechoic	70 × 70	Debris	≫	Necrosis	Normal	Normal
14	60 × 60	Anechoic	65 × 70	Anechoic	≫	Follicular	Mul.C.	Normal
15	63 × 63	Anechoic	70 × 70	Anechoic	≫	Follicular	Mul.C.	Follic
16	60 × 60	Anechoic	70 × 67	Anechoic	≫	Follicular	Mul.C.	Normal
17*	68 × 60	Anechoic	68 × 60	Anechoic	=	Necrosis	Mul.C.	Normal
18	40 × 40	Anechoic	40 × 40	Anechoic	=	Necrosis	Mul.C.	Normal
19	45 × 45	Anechoic	45 × 45	Anechoic	=	Necrosis	Normal	Normal
Spontaneous resolution								
20	40 × 40	Anechoic	15 × 15	Anechoic	≪	—		Follic
21	60 × 60	Anechoic	50 × 50	Anechoic	≪	—		Normal
22(Bil)	30 × 25	Anechoic	30 × 25	Anechoic	=	—	25 × 25	Normal
23	40 × 40	Anechoic	25 × 30	Anechoic	≪	—		Normal
24	50 × 50	Anechoic	30 × 30	Anechoic	≪†	Follicular		Normal
25‡	80 × 85	Anechoic	30 × 30	Anechoic	≪	—		Follic

Abbreviations: Bil, bilateral cyst; Debris, fluid/debris level; ≫, increased; =, unchanged; ≪, decreased; Mul.C., multiple cysts; Follic, ovarian follicles.

*Operated on for intestinal obstruction.

†Capitonnage during intervention for contralateral incarcerated hernia.

‡Antenatal ignicentesis for fetal caval compression.

complications in 100% (8 antenatally and 5 postnatally). Oophorectomy was the only possible surgical intervention.

There is evidence that surgical resection is still the most common treatment in newborns with prenatal ovarian cysts[3,13,14] given that oophorectomy for complicated cysts was required in 64% of our cases. In two cases surgery was required for the complications of intestinal volvulus and obstruction. This should be taken into account when suggesting conservative management.[3,11,15,16]

Surgical treatment is required for US complicated cysts and should be recommended for simple cysts that increase in size or persist unchanged. It is unlikely that these will benefit from antenatal[1,17,18] or postnatal[5] needle aspiration. This procedure could reduce either the risk of torsion or allow early detection of complications. We have treated one case showing antenatal caval compression in this way. The cyst decreased in size significantly, pregnancy continued without problems, and spontaneous resolution of the cyst occurred by 2 months of age.[17]

Therefore, conservative treatment should be limited to those cases of simple decreasing cysts. A close follow-up is essential to prevent the onset of major, life-threatening complications.

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