



Prenatal Ultrasound Diagnosis of Urachal Cyst with Favorable Evolution

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Abstract

The urachal cyst is a rare congenital anomaly due to a lack of apposition of sheets remains allantoid. Diagnosis is based on prenatal ultrasound. We report the case of an urachal cyst diagnosed in a female fetus in the third trimester of pregnancy which regressed spontaneously in the postnatal period.

Comment: Mrs. CD, a 27 year-old consulted us as part of the regular monitoring of a normal course of pregnancy. At 32 weeks, ultrasounds showed an anechoic oval-shaped and well-limited image located above the upper pole of the bladder, below the insertion of the cord. Diameter was 12 mm and the image was connected to the bladder through a thin orifice. The umbilical ring appeared wide and connected to the abdominal collection by a 5 mm-channel. However, the skin surface was normal with no solution of continuity. On ultrasound at 37 weeks gestation (WG), the pelvic anechoic image kept the same features but the thin connection was no more visible. Vaginal delivery occurred at 40 GW and 5 days. Examination of the newborn found normal abdominal skin covering. By 12 months, ultrasounds found that the cyst completely disappeared.

Conclusion: The permeable urachus is a progressive disease. Its development depends on the clinical form of its manifestation. Surgical treatment is often necessary, but spontaneous regression is possible for simple cysts until postnatal period.

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Introduction:

The urachus is a median extraperitoneal tubular structure that connects the posterior surface of the umbilicus to the bladder dome. It lies between the peritoneum back and the front fascia transversalis within the space of Retzius. It grows from the 28th gestational day and eventually obliterates in the eighth week of gestation.

The urachus could remain permeable all along its route or partially obliterated. Persistent permeability of the urachus in its bladder, umbilical or intermediate portion is a rare condition that leads respectively to the occurrence of urachal diverticulum, umbilical pilonidal sinus or urachal cyst (1, 2).

We report the case of a permeable urachus detected by ultrasounds in the third trimester. It had a spontaneous favorable evolution during the postnatal period.

CASE:

Mrs. CD, a 27 year-old primigesta primigravida, without notable medical or surgical history, consulted us as part of the regular monitoring of her pregnancy.

The first trimester echography was performed at the twelfth gestational week (GW) and found a nuchal translucency of 0.7 mm.

Screening for trisomy 21 revealed a risk of 1/10000.

An echography performed at 24 weeks visualized a normal-sized bladder in pelvic position corbelled by umbilical artery (Fig. 1).

At 32 weeks, ultrasounds showed an anechoic oval-shaped and well-limited image located above the upper pole of the bladder, below the insertion of the cord. The image had a diameter of 12 mm and was connected to the bladder through a thin orifice. The umbilical ring appeared to be wide and connected to the abdominal collection through a 5 mm-channel (Fig. 2). The skin surface and the amniotic fluid amount were both normal

The final diagnosis was urachus cyst.

At 37 GW, the pelvic anechoic image kept the same features but the thin connection was no more visible. Bladder repletion was

normal and the amniotic fluid was still in adequate amount.

Further morphological examination by fetal MRI was performed confirming the absence of associated anomalies.

A normal vaginal delivery took place at the fortieth 40 GW giving birth to a 3180 gram-girl. Apgar score measured at one, 5 and 10 minutes after birth were respectively 9, 9 and 10.

Examination of the newborn found a normal abdominal skin covering.

We decided to perform regular ultrasound monitoring of the newborn. At 3 months, abdominal echography showed a significant involution of the anechoic image which only measured 7 mm (Fig.3). The channel was no longer visible. Kidneys were normal without dilated caliceal cavities; bladder was in place away from the collection.

By 12 months, the cyst completely disappeared.

COMMENT:

Umbilical cysts are a rare entity. Their prevalence is between 0.4 and 3.4% with a sex ratio of 3 boys for one girl (1, 2, 3). There are two types of cysts: true cysts and pseudocysts.

- True cysts: they are characterized by their proper epithelium and are derived from the residual allantoid or omphalomesenteric duct (1, 4).

- Pseudo-cysts: they are caused by localized edema or degeneration of Wharton's jelly and are associated with a high rate of chromosomal abnormalities, mainly trisomy 13 and 18 while true cysts do not seem associated with this risk (5).

Differentiation of these two types is difficult by conventional ultrasound.

The pathogenesis of both cysts remains unclear although obstructive uropathy has been proposed as the underlying mechanism by some authors (2, 6).

In the first trimester, the permeable urachus appears as an anechoic image at the basis of the cord communicating with the bladder dome and corbelled by the umbilical arteries (7, 8, 9, 10).

In our case, the anechoic picture was only observed at the third trimester probably because of the evolving nature of the urachal

cyst .Indeed, permeable urachus, usually evolve towards an increase in the volume of the cystic cord image with a possible appearance of pseudocystic images or a cord edema (7). Rupture is almost the rule and occurs mostly between 22 and 32 weeks (9). A favorable evolution with spontaneous regression and complete disappearance of the cystic mass was also reported by some studies including the one by Sepulveda et al (10). This development usually ends prenatally. In contrast, in our case, the cyst regression continued in the post-natal period until complete closure of the urachus at 12 months. Such an evolution can be explained by the fact that, in our case the umbilical cyst, was located at the basis of the cord in its intra-abdominal side.

Prognosis is usually favorable, however, cases of fetal death have been reported (2, 9). Karyotype study and magnetic resonance imaging are not indicated in the typical forms.

In complicated clinical forms associated with bladder exstrophy, surgical resection of urachus and bladder protrusion should be performed at birth. Abstention is sometimes possible in cases of small fistula without bladder protrusion or in cases of cysts with no repercussions on the upper urinary tract, as spontaneous closure may be obtained within a month. In most cases, surgery does not affect bladder function even though some cases of vesicoureteral reflux or reduced bladder capacity have been reported (9).

In our case, the urachal cyst was isolated with a bladder in place. No surgical treatment was needed. Spontaneous disappearance of the cyst was observed by ultrasounds.

Conclusion:

The permeable urachus is a progressive disease whose diagnosis is possible by ultrasounds as early as the first trimester. This condition does not justify additional imaging or karyotype studying. Surgical treatment is often necessary, but spontaneous regression is possible for simple cysts until postnatal period.

Conflicts of interest:

Authors declare that there is no any conflict of interest.

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Figure 1. Anechoic image in pelvic position corbelled by the umbilical arteries corresponding to the bladder in physiological position.



Figure 2. Anechoic well limited collection besides the bladder associated with a large umbilical ring. The bladder repletion appears behind the anechoic picture.



Figure 3. Anechoic image located below and to the left of the umbilicus. It measures 7 mm by 5 mm without partition or vegetation. This image is at 3 mm from the skin surface



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