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SCIENTIFIC ARTICLE - CASE REPORT

ALLANTOIC CYST ASSOCIATED WITH OBSTRUCTIVE UROPATHY: A CASE REPORT WITH SPONTANEOUS PRENATAL REGRESSION

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ABSTRACT

INTRODUCTION: The allantoic cyst is a dilation that occurs due to inadequate regression and closure of the urachus. Our objective was to describe the prenatal findings of a fetus presenting with an allantoic cyst and evidence of obstructive uropathy that progressed with spontaneous regression still in the second trimester.

CASE REPORT: The patient was a 17-year-old pregnant woman whose obstetric ultrasound at 16 weeks revealed a cord cyst measuring 2.3 cm in diameter, communicating with a dilated fetal bladder. The "keyhole sign" was observed, indicating possible urethral obstruction. One month later, dilation of both renal pelvises was also noted. At 24 weeks, the cyst was no longer visible, and the bladder dimensions were normal, which also occurred with the renal pelvises by 35 weeks. The child was born asymptomatic, with no persistence of the urachus.

DISCUSSION: There is a hypothesis that allantoic cysts may form due to increased pressure in the urinary tract caused by an obstruction, as seemingly observed in our case. It is noteworthy that both cases exhibited spontaneous and early involution compared to descriptions in the literature, possibly due to cyst rupture or resolution of the cause of the obstruction.

CONCLUSION: The diagnosis and description of the evolution of allantoic cysts during pregnancy are rare. They tend to exhibit spontaneous involution, but not as early as in our case, which may have occurred due to cyst rupture or natural resolution of fetal urinary obstruction.

KEYWORDS: CYSTS; UMBILICAL CORD; PRENATAL DIAGNOSIS; ULTRASOUND; SPONTANEOUS REMISSION.

INTRODUCTION

Umbilical cord cysts are relatively rare, with a prevalence ranging from 0.4% to 3.4% in the first trimester of pregnancy. These cysts can be classified into pseudocysts, which are more common and sometimes associated with chromosomal anomalies, and true cysts, which are less frequent and typically located near the fetal insertion of the umbilical cord [1].

The allantoic cyst is characterized by being a dilation caused by inadequate regression and closure of the urachus [2]. Some cases are associated with obstructive uropathy, leading to the hypothesis that the emergence of these cysts may occur due to increased pressure in the urinary tract caused by obstruction. However, its etiology is not yet fully understood [3].

Significant advances in the development of high-resolution ultrasound equipment have allowed for more accurate diagnoses of various types of fetal anomalies, including allantoic cysts present in the umbilical cord 1. Furthermore, this examination, being highly sensitive, has enabled the identification of detailed characteristics of these cysts, which can further assist in their diagnostic confirmation [4]. Although many allantoic cysts may spontaneously disappear during the prenatal period, possibly due to rupture, this resolution can result in the presence of a patent urachus after birth, often necessitating surgical intervention. However, the clinical significance and natural history of allantoic cysts are still underreported in the literature, as well as not fully understood [1].

In light of this, our objective was to describe the case of a fetus diagnosed with an allantoic cyst associated with obstructive uropathy, which exhibited spontaneous resolution. Additionally, we will discuss issues related to its diagnosis and origin, as well as its evolution.

CASE REPORT

The patient was a 17-year-old pregnant woman in her third pregnancy, with a prior history of two spontaneous miscarriages. She was referred at 16 weeks and 2 days of gestation due to a collection of fluid, with a thick wall, adhered to the fetal abdominal wall, of unclear etiology, associated with a possible posterior urethral stenosis.

The ultrasound performed at this stage of pregnancy in our service showed the presence of a cyst located in the umbilical cord, measuring 2.3 cm in diameter (Fig. 1A), along

with bladder dilation, thickening of its wall, and evidence of the "keyhole sign," indicative of urethral obstruction (Fig. 2B). The renal pelvises were of normal size (the right measured 3.5 mm and the left 3.8 mm) (Fig. 2A). The examination performed at 18 weeks and 2 days showed similar findings.

The fetal karyotype, obtained through amniocentesis, was normal (46,XY). The ultrasound examination performed one month later showed an umbilical cord with three vessels and the presence of a cyst inside, measuring 2.7 cm in diameter (Fig. 1B). There was dilation of the renal pelvises (the right measured 6.8 mm and the left 6.6 mm) (Fig. 2C). Additionally, communication between the bladder and the allantoic cyst was visualized through the urachus (Fig. 2D). The amniotic fluid was found to be of normal volume.

In the ultrasound evaluation at 24 weeks and 2 days of gestation, the cyst in the umbilical cord was no longer visible. There was only a coiling of the umbilical cord near the abdominal wall (Fig. 1C). Additionally, the bladder had a normal shape and dimensions (Fig. 2F). The renal pelvises measured 6.0 mm on the right and 5.0 mm on the left (Fig. 2E).

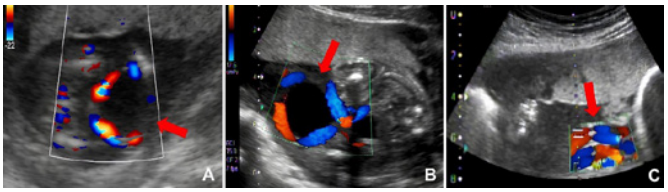

Figure 1. Two-dimensional ultrasound images using Doppler, showing the allantoic cyst (red arrows) at 16 weeks and 2 days (A), and at 21 weeks and 2 days (B). Note that at 24 weeks and 2 days, the cyst was no longer visible, and there was a coiling of the umbilical cord near the abdominal wall (red arrow) (C).

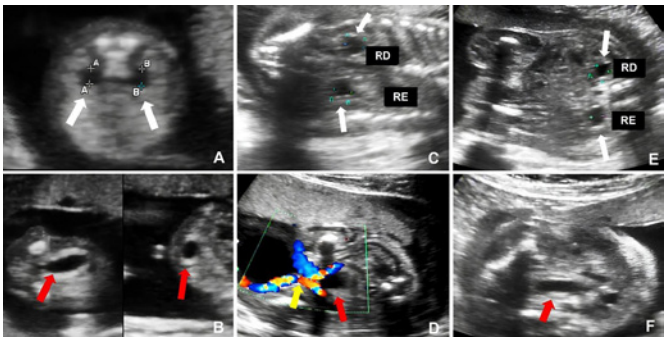

Figure 2. Images of the fetal urinary tract observed through two-dimensional ultrasound at different stages of gestation.

In the ultrasound examination at 26 weeks and 4 days, there was also a reduction in the size of both renal pelvises. The fetal echocardiogram with Doppler did not reveal any anomalies. At 35 weeks, the amniotic fluid index (AFI) was normal. The ultrasound performed near the end of the pregnancy, at 37 weeks, also showed no abnormalities.

The child was born via cesarean section at 37 weeks and 5 days of gestation, weighing 3,150 grams, with Apgar scores of 9 and 10 at one and five minutes, respectively. He was asymptomatic, with no signs of patent urachus or urethral obstruction. His renal function was normal.

DISCUSSION

Despite recent advances in imaging diagnosis, the prenatal description of allantoic cysts remains rare in the available literature [1,4,5]. Reports detailing their evolution, such as in the present case, are even less common [6].

From a diagnostic perspective, as observed in our report, two-dimensional ultrasound with Doppler is sufficient to identify the cyst. Important findings include the visualization of the cyst within the umbilical cord, among the vessels, and the identification of a communication with the fetal bladder [4]. Complementary examinations, such as fetal echocardiography, were crucial in excluding associated malformations.

Allantoic cysts tend to occur in isolation. However, the literature describes associations with other fetal anomalies, such as omphalocele, hypospadias, and Meckel's diverticulum [7], as well as chromosomal abnormalities like the microdeletion involving the 1q21.1q21.2 region [8]. Although the relationship with chromosomal alterations, such as trisomy 13 (Patau syndrome) and trisomy 18 (Edwards syndrome), is stronger in cases of umbilical cord pseudocysts 1, this finding reinforces the importance of laboratory tests, such as karyotyping and microarray (array-CGH), in cases of allantoic cysts [8,9].

In our case, ultrasound revealed findings suggestive of obstructive uropathy at the urethral level, which spontaneously resolved during gestation. The karyotypic analysis did not reveal any chromosomal abnormalities, but it does not exclude the possibility of microscopic alterations, such as microdeletions or microduplications, that may not be detected by this examination. These alterations can be identified using molecular cytogenetic techniques, such as FISH or array-CGH [10].

Allantoic cysts typically increase in size before resolving spontaneously, suggesting rupture before birth [1]. In the present case, we believe that the resolution occurred due to cyst rupture, as suggested in the literature [1], since the cyst slightly enlarged before disappearing. This may have resulted in the formation of a fistula, decompressing the urinary tract by allowing fetal urine to extravasate into the amniotic space.

Another hypothesis is that the resolution occurred due to decreased pressure in the urinary tract, resulting from the spontaneous resolution of the obstruction [4]. This assumption is supported by the absence of signs of obstructive uropathy after birth, such as the presence of a posterior urethral valve [4].

Allantoic cysts in the umbilical cord are often associated with patent urachus, a condition that typically requires surgical treatment [1]. The usual postnatal approach is surgical resection [5]. However, in our case, there was spontaneous resolution of the cyst during the second trimester, earlier than what is normally reported, which may explain the absence of patent urachus after birth. It is also noteworthy that, despite the signs of obstructive uropathy during gestation, the newborn's renal function

was preserved, avoiding complications such as the need for dialysis or kidney transplantation. This may be related to the early resolution of the signs of obstruction, as observed during pregnancy.

Infections are the primary complications associated with allantoic cysts [2]. Other possible consequences include prematurity, the formation of fistulas, abscesses [5], and, rarely, progression to malignancy [2].

CONCLUSIONS

The diagnosis and description of the evolution of allantoic cysts during pregnancy are rare. While they generally occur in isolation, some cases are associated with chromosomal anomalies or malformations, particularly urinary tract obstructions. These cysts tend to resolve spontaneously, but the early resolution observed in this case may have occurred due to cyst rupture, leading to fistula formation, or due to the spontaneous resolution of the urinary obstruction. This may have contributed to the absence of patent urachus after birth, as well as to the preservation of renal function.

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