Clinical Brief

Allantoic Cyst and Patent Urachus

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ABSTRACT

Allantoic cysts of the umbilical cord are extremely rare anomalies. Only few cases have been reported in the postnatal life. The etiopathogenesis is still obscure. We describe a case of allantoic cyst and patent urachus in a newborn associated with hypospadias and meatal obstruction. We also present the review of literature regarding this entity, embryology and etiopathogenesis. **[Indian J Pediatr]** Email:- *kamalesh_pal@yahoo.com*, *kamalesh_pal@hotmail.com*

Key words : *Allantoic cyst; Patent urachus; Hypospadias; Meatal obstruction*

Allantoic cysts of the umbilical cord are true cysts lined by uroepithelium, represent persistence of allantoic structures and are extremely rare in the postnatal life. We present a case report of this rare allantoic cyst of cord and patent urachus in a newborn associated with proximal hypospadias and meatal obstruction. We also present the review of literature regarding this anomaly, embryology, associated conditions and management outcome.

CASE REPORT

A full term male baby weighing 2400 g was born to a 28 years old Saudi Female (G7P6) by normal vaginal delivery. There was no history of maternal illness, exposure to teratogens or any congenital anomalies in the family and siblings. Prenatal USG was essentially normal. Postnatally the baby was found to have a cystic swelling (4x4cm2) at the base of the umbilical cord. Some reddish polypoid fleshy tissues could be seen through the coverings of the sac lying at its floor (Fig. 1). The cord had normal umbilical vessels. Examination of baby's genitalia revealed a ventral chordee of penis, proximal hypospadias and severely stenotic meatus. Suprapubic pressure revealed distension of the cystic swelling of the cord with egress of watery fluid through a small defect in the cyst and no urine per urethra. There was no other gross congenital anomaly or any dysmorphic features. A provisional impression of patent urachus, chordee with hypospadias and meatal obstruction was made. Blood investigations were normal. Radiology showed normal pubic symphisis. USG showed mild hydroureteronephrosis of right kidney.

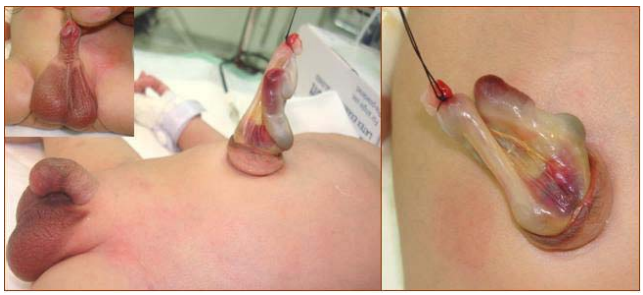

Fig. 1. Showing Allantoic cyst of umbilical cord, chordee, hypospadius and meatal stenosis. Fleshy polypoidal tissues are seen at the base.

Baby underwent meatotomy, excision of cyst in the cord, fleshy polypoidal tissues and urachus and closure of bladder dome. Postoperative recovery was smooth with normal voiding through hypospadiac meatus. MCUG done at 7th post operative day revealed normal contour of bladder, normal posterior urethra with no evidence of VUR/ bladder outlet obstruction. Post op. USG showed resolution of right sided hydroureteronephrosis. Baby is waiting for hypospadias repair.

Histopathology revealed the cyst to be lined with cuboidal uroepithelium consistent with allantoic cyst.

DISCUSSION

Cystic lesions of umbilical cord include, more commonly pseudocysts due to degeneration of Wharton's jelly,

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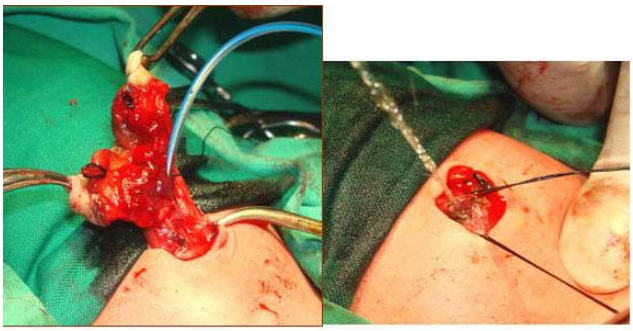

Fig. 2. Intraoperative picture of polypoidal tissues, patent urachus (catheter in situ). Urine seen ejected through patent urachus.

amnion inclusion cysts or true cysts lined by uroepithelium called Allantoic cyst or alimentary tract epithelium (Omphalomesenteric duct cyst).[1-4] Hemangiomas and vascular malformations also give rise to cystic lesions of the cord. Allantoic cysts are extremely rare in the postnatal life and a total of seven cases (including our case) have been reported so far.[5-10] Few other cases have been reported in the antenatal USGs with complete resolution near term or perinatal rupture leading to patent urachus only.[3]

Embryologically[11] allantois develops on about the 16th day of life as a diverticulum of the yolk sac and is invaginated into the umbilical cord. With the division of the cloaca, the allantois loses its hindgut connection but remains connected to the urogenital sinus through a narrow and elongated tube called urachus which extends from the apex of the bladder to the umbilical ring. Therefore anatomically allantois is the extra abdominal and urachus is the intra abdominal component of common allantoic-urachus-vesical communication.[8] Allantoic- urachal lumen undergoes obliteration by around 6 weeks of gestation and umbilical cord differentiation is completed at approximately 10 weeks.[11]

Failure of this obliteration may result in different types of urachal remnants *e.g.* complete patency or vesicoumbilical fistula, vesico urachal diverticulum, urachal sinus and urachal cyst. However, persistence of allantoic structures has been rarely encountered. There have been reports of antenatally detected cysts of umbilical cord in the 1st-2nd trimester presenting postnatally as patent urachus only without the evidence of any cystic structures.[3,12] These disappearing vesico-allantoic cysts observed on prenatal ultrasound have been poorly understood. Subvesical pseudo-obstruction and rupture of allantoic wall have been postulated as the etiology.

But in the present case there was severe meatal stenosis , back pressure changes in the urinary tract and rupture of allantoic cyst allowing egress of urine directly into the amniotic cavity thus preventing any oligohydramnios or severe back pressure changes in the urinary tract.

Urachal patency may have an identical presentation to pseudobladder exstrophy (abdominal muscular deficiency with a skin covered bladder and vesico umbilical fistula) as they both produce urine through the umbilicus. Especially in the present case there was polypoid fleshy tissue at the base of the umbilicus mimicking pseudo exstrophy (Figs. 1,2). However pseudoexstrophy of bladder was ruled out due to lack of musculoskeletal abnormalities *e.g.* splitting of abdominal musculature, symphisis and pelvic structures.

The fleshy polypoidal remnants of allantois-urachal system were excised inorder to prevent any neoplastic change in the future.[7]

Prenatal USG has been able to diagnose umbilical cord cysts in upto 3% of pregnancies[3,12] but most of those disappear by 3rd trimester and only few present postnataly as patent urachus or pseudocysts. Fetal MRI has been recently used to diagnose and characterize these cysts between pseudocyst, true cyst and hemangiomas.[9] Those cysts which persist beyond 2nd trimester there is reported association with other congenital (*e.g.* omphalocele, hydronephrosis, patent urachus etc) or chromosomal anomalies (trisomy 18, 13 or aneuploidy).[3-5,13] Intrauterine fetal demise has also been reported due to compression of umbilical vessels by these cystic swellings.[6]

The present case is the first report of association of allantoic-urachus-vesical communication with proximal hypospadius and meatal obstruction.Because of a small defect in the allantoic cyst, urine was draining directly into the amniotic cavity thereby minimizing the morbidity of urethral obstruction.There was adequate liquor thus preventing Potter sequence and pulmonary hypoplasia.

Therefore rare allantoic cyst can have varied clinical presentations. The etiopathogenesis is still obscure and meatal obstruction (in the present case) could be one plausible cause. In the absence of chromosomal anomalies, the outcome is excellent following surgery.

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