Prenatal Ultrasonographic Diagnosis of Hydrometrocolpos

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Prenatal diagnosis of an imperforate hymen remains a clinical challenge. We present a case of a 28-year-old female who was sent to our hospital for an anomaly scan at 32 weeks of gestation. The lower abdomen of the fetus showed a cystic mass, which was funneling towards the vulva and measured approximately 5.8 × 3.9 cm. The mass showed low level internal echoes and was initially diagnosed as a distended urinary bladder with fluid-debris level. The patient was made to wait for 30 to 45 minutes for emptying of the urinary bladder. After 45 minutes, the patient was rescanned and this time another cystic mass appeared adjacent to the existing mass, which was actually the filling of the urinary bladder. Since the sex of the fetus was female and the mass was separate from the urinary bladder funneling towards the vulva, we diagnosed it as a case of hydrometrocolpos.

KEY WORDS — hydrometrocolpos, imperforate hymen, prenatal diagnosis, sonography

Introduction

Prenatal diagnosis of an imperforate hymen remains a clinical challenge. Hydrometrocolpos is a rare congenital disorder very rarely reported on prenatal sonography. Hydrometrocolpos occurs in the female fetus due to dilatation of the uterus and vagina as a result of mucus secretions in the genital tract. It may occur secondary to an imperforate hymen, a transverse vaginal membrane, or some degree of vaginal atresia [1]. The spectrum of hydrometrocolpos is quite broad, ranging from mild cases that may remain undetected until adolescence to more severe conditions described prenatally as a large pelviabdominal cystic mass. There are no data on fetal presentation of hydrometrocolpos due to the rarity of the disease and the difficulty in prenatal diagnosis, although neonatal presentation is better known. However, a few reports [2] have been published on prenatal diagnosis of hydrometrocolpos by sonography. Here we report a case of hydrometrocolpos diagnosed prenatally by ultrasound.
Early intervention saved the baby from complications, which could have occurred in the case of late diagnosis.

**Case Report**

A 28-year-old gravida 3 para 2 female presented to us for an anomaly scan at 32 weeks’ gestation. Her history revealed spontaneous conception with meticulous perinatal follow-up. A 10-week ultrasound showed a normal singleton intrauterine pregnancy with no associated abnormalities. A scan performed at 21 weeks was unremarkable. At 30 weeks, routine ultrasound revealed a cystic mass in the lower abdomen. A detailed anomaly scan was performed at our referral centre, which showed a singleton fetus with cephalic presentation, anterior placenta and adequate liquor. The biparietal diameter and femur length were compatible with 32 weeks’ gestation. The lower abdomen of the fetus showed a cystic mass, which was funneling towards the vulva and measured approximately 5.8 × 3.9 cm. The mass showed low level internal echoes and was initially thought to be a distended urinary bladder with a fluid-debris level versus an ovarian cyst (Fig. 1). The patient was made to wait for 30–45 minutes for emptying of the urinary bladder. After 45 minutes, the patient was rescanned, and this time, another cystic mass appeared. This mass was echo free adjacent to the existing mass and was thought to be the actual urinary bladder, which became filled over a period of time (Fig. 2).

For differential diagnosis, we determined that the sex of the fetus was female. Since the mass was constantly seen in the pelvis and lower abdomen of the fetus, had low level internal echoes along with funneling towards the vulva, and was adjacent to the urinary bladder, we diagnosed this case as hydrometrocolpos. Our findings of hydrometrocolpos were further confirmed on postnatal ultrasound (carried out at another center) and a physical examination. These findings led to the drainage of mucoid and blood stained fluid by cruciate incision on the protruding hymen 10 days after delivery.

The baby had an uneventful recovery and no other complications were seen.

**Discussion**

The prevalence of congenital dilatation of the uterus and vagina causing hydrometrocolpos is less than 1 per 30,000 births [1]. Obstruction of the vagina with accumulation of secretions and distension of the vagina was first reported in 1856 [3]. When only the vagina is distended, it is termed as hydrocolpos, but if there is associated uterine distension...
it is termed as hydrometrocolpos. This congenital defect in a female may be caused by an imperforate hymen or cloacal malformation [4,5]. In case of a cloacal malformation, there is a common channel for the urethra, vagina and anus. The obstruction of urinary, genital and intestinal secretions caused by these malformations blocks drainage, leading to dilatation of the proximal structures. The content of fluid accumulating may be clear (urine) or turbid with a fluid-debris level on sonography (meconium or cervical secretions) [6,7].

The incidence of neonatal cloacal anomalies is approximately 1 in 50,000 to 400,000 deliveries [8,9]. The cloaca is a transient structure during fetal life, which is formed from a developing tail fold at 3 weeks of gestational age by the confluence of the allantois and hindgut. By the sixth week of embryonic life, the cloaca is divided, resulting in a urogenital sinus anteriorly and a separate hindgut posteriorly [9]. The urethra subsequently develops from the caudal end of the urogenital sinus after its separation from the cloaca [10]. Developmental arrest can occur at any stage, resulting in a wide spectrum of diseases involving genitourinary, rectal, perineal and external genital anatomy [11,12]. Hydrometrocolpos develops as a result of vaginal outflow obstruction, leading to accumulation of secretions. It might be secondary to the presence of a transverse vaginal septum, vaginal atresia or imperforate hymen [13]. Hydrometrocolpos has been reported as early as 25 weeks prenatally [10], whereas cloacal anomalies have been reported at a mean gestational age of 27 weeks [14,15].

Hydrometrocolpos in the newborn predominantly presents as an abdominal mass with regional compression [4]. Compression of the lower urinary tract can cause hydronephrosis [4,5], whereas compression on the gastrointestinal tract rarely causes obstruction to the passage of meconium [16]. However, in our case, the fetus did not have any of the above mentioned complications caused by hydrometrocolpos. There was no hydronephrosis or distension of the bowels secondary to compression. In situations where hydrometrocolpos results from an imperforate hymen, a tense protruding membrane is evident at the vulva [16]. Hydrometrocolpos is sometimes associated with urogenital sinus and autosomal recessive McKusick-Kaufman syndrome [17].

Prenatal diagnosis of a tumor with dilatations of uterus and ureters in the pelvic region often involves difficulties because of numerous differential diagnoses and late pregnancy presentations. Magnetic resonance imaging is also reported to be a useful complementary tool for assessing these anomalies [18,19]. The diagnosis of hydrometrocolpos is often delayed because of the rarity of this condition. Newborns are often exposed to prolonged investigations to exclude more common causes of intestinal and urinary obstruction. In developing countries, diagnosis can be further delayed by the absence of ultrasound facilities and a lack of awareness of antenatal booking. Early diagnosis and appropriate treatment may prevent patients from unnecessary laparotomy and hysterectomy [20]; for example, in our case, the baby was operated on 10 days after delivery and had an uneventful recovery.

Treatment of hydrometrocolpos involves drainage of accumulated fluid and establishing communication between the vaginal epithelium and vulva. For an imperforate hymen and low vaginal atresia, the perineal approach is preferable. The abdominoperineal approach is usually reserved for high vaginal atresia [21].

Counseling of parents whose fetus is diagnosed prenatally as having a vaginal obstruction should include discussion regarding possible anomalies, as well as possible complications of labor due to a distended abdomen. Delivery should be performed at a centre that has perinatal, neonatal and surgical facilities available [18].

References

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