Review Article

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Hydrocolpos

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Abstract

Imperforate hymen is the most common congenital malformation of the female genital tract. It can manifest in the neonatal period as hydrocolpos or at menarche as hematocolpos. The clinical manifestations of hydrocolpos include: bulging membrane at introitus, lower abdominal cystic swelling, abdominal distention, difficulty in emptying the bladder. The diagnosis of hydrocolpos is by USG and MRI. The anomalies associated with the hydrocolpos are imperforate anus, persistent urogenital sinus, cloacal dysgenesis etc. The surgical treatment can be simple hymenotomy or hymenectomy while laparotomy is indicated for the treatment of abdominal complications. Complications of hydrocolpos are hydronephrosis, chronic kidney disease, sepsis, Pyocolpos. Delay in the diagnosis of hydrocolpos lead to development of complications and more difficult management.

Keywords: Hydrocolpos; Imperforate Hymen; Abdominal distention; Prenatal diagnosis.

Introduction

Female genital malformations occures in 5–7% of general population. Imperforate hymen is the most common genital outflow tract anomaly. Since development of kidneys and urinary tract is closely linked to development of Mullerian duct, anomalies of kidneys and urinary tract are common in these girls. Lack of adequate reproductive organ development requires specific surgical, medical, psychological and long term follow up.[1] Malformations of genital tract present at different times during childhood and adolescent. Malformations evident at birth or afterword's may affect the genital tract alone or with associated urinary tract or genital tract anomaly. Imperforate hymen is the most common congenital malformation of the female genital tract. It is defined as a genital anomaly in which a layer of the epithelialized connective tissue that forms the hymen has no opening and completely obstructs the vaginal introits. The reported incidence of imperforate hymen is 0.0014 to 0.1% per year in full term new-borns.[2] Hydrocolpos is vaginal distension with fluid accumulation due to acombination of stimulated secret oryglands and vaginal obstruction. The fluid accumulation can also be due to the presence of urogenital sinus with collection of urine.[3]

It can manifest in the neonatal period as hydrocolpos or at menarche as haematocolpos. Hydrometrocolpos is defined as the accumulation of secretions within the endovaginal and endometrial canal and its reported incidence is ~0.006% per year in full term new-borns. An imperforate membrane situated in the region of hymen obstructs the lower vagina and allows vaginal and cervical secretions to collect therein. The membrane is often referred to as an imperforate hymen, although this is not strictly correct, the hymen can usually be detected as septate structure applied very closely to external aspect of obstructing membrane. This is called as transverse vaginal septum and it results from failure of fusion of urogenital sinus and downgrowth of vaginal plate from the Mullerian structures. In majority of patients with imperforated hymen, the abnormality become evident at puberty. The quantity of vaginal secretions in such patients is insufficient to cause symptoms, when a large quantity of fluids collects,

there may be difficulty in emptying the bladder, as the distended vagina pushes the bladder.[2]

Origine of Fluid: Passive hormone stimulation across the placenta

Physiological vaginal discharge and mucus of cervical glands.[2]

Table 1:

Causes of Hydrocolpos
Imperforate hymen
Labial adhesions
Transverse vaginal septum
Vaginal atresia
Vaginal agenesis
Malformations of cloaca[4]

Table 2:

Clinical Manifestations
Lower abdominal cystic swelling
Bulging membranes at introitus
Imperforate vaginal orifice
Cystic swelling infront of rectum[2]
Abdominal distention
Difficulty in emptying the bladder
Symptoms due to com- pression of bladder, bowel or pelvic veins.[4]

The bulging membrane at the vulva does not have the bluish discolouration of the membrane in haematocolpos, since the retained fluid is milky white in colour; if as very rarely happens, there is a short length of uncanalised vagina instead of a membrane, there will be no bulge at all and the diagnosis may rest upon the examination of lower abdominal swelling, cystic mass felt at a higher level on rectal examination, and the imperforate vaginal orifice.[2]

The anomalies associated with hydrometrocolpos can be

- Isolated such as imperforate anus, persistent urogenital sinus , cloacaldysgenesis
- Part of a genetic syndrome Bardet–Biedl, McKusick–Kaufman, Pallister–Hall.[5]

Diagnosis

Hydrocolpos is fluid accumulation in vagina and possibly also the uterus (Hydrometrocolpos). It is observed in neonates but may also occur late in childhood. It is usually caused by a vaginal obstruction resulting from an imperforate hymen or a septum of varying thickness occluding vaginal introitus. Correct early diagnosis of Hydrocolpos by USG makes laparotomy unnecessary. USG is not only safe but also reliable and specific in investigating both abdominal masses and urinary tract, and it is therefore strongly recommended before any radiologic examinations are performed.[6] Prenatal diagnosis of imperforatehymen with hydrometrocolpos has been reported as early as 25 weeks of gestation.[7]

Perineal inspection reveals the presence of a cystic mass at the vaginal introits and suggests the diagnosis, that can be confirmed through abdominal ultrasound and magnetic resonance imaging, if needed to rule out complex genitourinary malformations. Diagnosis of Hydrocolpos.

- Prenatal – USG

  MRI
- Postnatal – Local Examination

  USG

  MRI[8]

Because obstruction of lower urinary outlet occurs very rare in females, it is essential to differentiate ovarian tumors from hydrocolpos immediately after birth. With USG it is usually possible to ascertain the vaginal origin of cystic mass with reasonable accuracy. The association of such a mass with hydronephrosis and obstructive megaureter should be easy to recognize and is pathognomic for hydrocolpos.[6]

A detailed prenatal US focusing on the fetal pelvic anatomy will provide anatomic details and facilitate appropriate prena-tal counseling to parents. Early US diagnosis improves the prognosis especially in children with associated complication of obstructive uropathy. MRI imaging provides additional anatomic details with excellent soft tissue contrast to determine the thickness of the transverse septum, length of the atresia, and the presence or absence of a cervix.[9] MRI has become more valuable in this setting and its role is still expanding.[10]

Management

Management of imperforate hymen depends on

- Age of presentation
- Severity of condition

In asymptomatic cases a conservative approach can be considered, but symptomatic patients require drainage of the secondary hydrocolpos. The surgical treatment can be simple hymenotomy or hymenectomy, while laparotomy is indicated for the treatment of abdominal complications.

Advantages of drainage of Hydrocolpos:

- Prevent obstructive acute kidney injury
- Avoids chronic renal damage
- Improve Hydronephrosis[11]

Treatment is simple in most cases. The intact membrane is incised and the retained fluid released. Redundant portions of the membrane excised. If obstruction is extensive great care must be taken to avoid bladder and rectum injury.[12]

The transabdominal drainage of hydrocolpos with indwelling tube is more preferred than transvaginal drainage to prevent reaccumulation. In general, infants with hydrocolpos and urogenital sinus have increased risk of sepsis due to collection of urine in vaginal vault. There have been reported deaths due to sepsis associated with hydrocolpos.[13,14]

Complications of Hydrocolpos

- Hydronephrosis
- Chronic kidney disease
- Sepsis
- Pyocolpos[15,16]

Counselling Parents

The diagnosis is better postponed until puberty although ultrasound demonstration of a uterus can be helpful in reassuring the parents. Parents should be warned about the possibility of hematocolpos and presenting symptoms. This condition may cause long term anxiety so counselling the parents is very important.[2]

Discussion

Congenital hydrocolpos is an uncommon disorder characterized by vaginal distension with fluid accumulation. It is due to increased secretions by cervical mucous glands secondary to maternal hormone stimulation which gradually accumulates, expands and builds up into a pelvic mass due to vaginal outlet obstruction. Infants with prenatal diagnosis of pelvic mass should be categorized as high risk deliveries and should be promptly followed by multidisciplinary team soon after birth.

Diagnosis is the most difficult and important aspect of hydrocolpos. The literature contains many examples of errors in diagnosis leading to laparotomy or even hysterectomy. The most common mistake, of course is to believe the swelling to be an ovarian cyst which can occur in newborn. This may happen because the examiner is unaware that the condition of hydrocolpos exists or does not examine the vulva. Therefor all masses in the newborn should be examined by ultrasound to identify the organ involved so that appropriate treatment can be planned.

Table 3:

Differential Diagnosisofabdominal Swellingwith Cystic Mass In Newborn:
1. Ovarian cyst
2. Cystic renal masses
3. Enteric duplication cyst
4. Mesenteric cyst
5. Meconium pseudocyst
6. Choledochal cyst
7. Adrenal cyst
8. Splenic cyst
9. Urachal cyst
10. Anterior sacral meningocele
11. Sacrococcygeal teratoma (Intra-abdominal cystic variety)
12. Chylous ascites

While dealing with congenital hydrocolpos,early diagnosis ideally in prenatal period and timely treatment is essential.

Barriers in limited resource setting;

- Lack of prenatal screening
- Deficiency of experienced specialists
- Belief in traditional healers

Training of health personnel towards a high index of caution could be first step to prevent complications. Delay in diagnosis of Hydrocolpos leads to development of complications and more difficult management.

Conclusion

Hydrocolpos is a rare condition in the neonate and should be suspected when a prenatal US identifies a midline abdominopelvic mass. Prenatal diagnosis and early newborn imaging lead to early detection and treatment of these cases. MRI is more useful tool than USG to detect associated anomalies.

A thorough newborn examination is essential to screen for an imperforate hymen, which can result in renal complications in the neonatal period. High index of suspicion for hydrocolpos in a newborn presenting with infraumbilical abdominal mass will facilitate timely intervention and prevention of complications.Complications like hydronephrosis and gastrointestinal obstruction secondary to mass

effect make it imperative that these infants be evaluated and treated soon after birth. The prognosis of isolated imperforate hymen is generally good, but its presentation in the neonatal period with hydrocolpos can lead to complications associated with high morbidity and mortality. Despite the critical presentation, the lack of appropriate equipment and the occurrence of complications, it is the only appropriate management and accurate follow-up will ensure that newborn is in good condition.

References

1. Alka B patil , Amod Mahajani, Nilay Patel, Obstructive lesions of the genital tract in adolescent female, Indian journal of trauma and emergency pediatrics,vol 7, no.2, April-June 2015.
2. D. Keith Edmonds, Malformations of genital tract, Dewhurst's practical Paediatric and Adolescent Gynaecology, 2nd Edition, Butterworth Publishers 1989.
3. F. C. Westerhout Jr., J. E. Hodgman, G. V. Anderson, and R. A. Sack," Congenital hydrocolpos," American Journal of Obstetrics and Gynecology, vol.89,no.7,pp.957–961,1964.
4. Vitale V, Cigliano B, Vallone G. Imperforate hymen causing congenital hydrometrocolpos. J ULTRASOund 2013;16:37–9.DOI:10.1007/s40477–013–0009–x.
5. Khanna K, Sharma S, Gupta DK. Hydrometrocolpos etiology and management: past beckons the present. PEDIATRSurgInt 2018;34:249–61. DOI:10.1007/s00383–017–4218–9.
6. Joseph S. Sanfillipo, Genital diseases, female -in adolescence, Pediatric and adolescent Gynaecology, WB Saunders compony, WS 360 P3707 1994.
7. Jenn-Jhy Tseng, Jason Yen-Ping Ho, Wen-Hsien Chen, Prenatal Diagnosis of Isolated Fetal Hydrocolpos Secondary to Congenital Imperforate Hymen, Journal of the Chinese medical association, July 2008,DOI 10.1016/S1726–4901(08)70132–1.
8. Nigam A, Kumar M, Gulati S. Fetal ascites and hydrometro-colpos due to persistent urogenital sinus and cloaca: a rare congenital anomaly and review of literature. BMJ CASE Rep 2014; published online: 24 January 2014. DOI:10.1136/bcr- 2013–202231.
9. M. C. Frates, A. J. Kumar, C. B. Benson, V. L. Ward, and C. M. Tempany, "Fetal anomalies: comparison of MR imaging and US for diagnosis," Radiology, vol. 232, no. 2, pp. 398–404, 2004.
10. Hubbard AM, Simon EM. Fetal imaging. Magn Reson Imaging Clin N Am 2002; 10:389–408.
11. Nigam A, Kumar M, Gulati S. Fetal ascites and hydrometro-colpos due to persistent urogenital sinus and cloaca: a rare congenital anomaly and review of literature. BMJ CASE Rep 2014; published online: 24 January 2014. DOI:10.1136/bcr- 2013–202231.
12. Ayaz UY, Dilli A, Api A. Ultrasonographic diagnosis of con-genital hydrometrocolpos in prenatal and newborn period: a case report. Med ULTRASON 2011;13:234–6.
13. I. Gupta and A. J. Barson, "Hydrocolpos with peritonitis in the newborn," Journal of Clinical Pathology, vol. 33, no. 7, pp. 679– 683, 1980.
14. A. Geipel, C. Berg, U. Germer et al., "Diagnostic and therapeutic problems in a case of prenatally detected fetal hydrocolpos," Ultrasound in Obstetrics and Gynecology, vol. 18, no. 2, pp. 169– 172, 2001.
15. A.Bischoff, M.A. Levitt, L. Breech, E. Louden, and A. Pen˜a, "Hydrocolpos in cloacal malformations," Journal of Pediatric Surgery, vol. 45, no. 6, pp.1241–1245,2010.
16. I. Gupta and A. J. Barson, "Hydrocolpos with peritonitis in the newborn," Journal of Clinical Pathology, vol. 33, no. 7, pp. 679– 683, 1980.