

Magnetic Resonance Imaging Findings in Hydrocele of the Canal of Nuck

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ABSTRACT

Hydrocele of the canal of Nuck is a rare cause of inguinal swelling in females. It is usually seen in the newborn and in children and rarely seen in adult females. We report a case of hydrocele of the canal of Nuck in an 18-month-old female who presented with a swelling in the left inguinal region, extending into the labia majora. Abdomino-pelvic ultrasonography revealed a tortuous heterogeneously hyperechoic structure inside an anechoic sac. Magnetic resonance imaging was done for further evaluation, which showed an elongated cystic lesion in the left inguinal region extending into the left labia majora. There was a heterogeneous tubular structure seen inside the sac, which appearance resembled the round ligament and ovary. These findings were suggestive of hydrocele of the canal of Nuck with herniation. Surgery was done which confirmed a hydrocele of the canal of Nuck with herniation of the round ligament, left ovary and part of the uterus in the sac.

Key words: Canal of Nuck; hernia; hydrocele; inguinal hernia

Introduction

Hydrocele of the canal of Nuck is a rare condition seen in female children due to the failure of complete obliteration of the canal of Nuck.^[1] Canal of Nuck is a patent pouch of peritoneum extending anterior to the round ligament of the uterus into the labia. Typically, it presents with cystic mass medial to the pubic bone at the level of the superficial inguinal ligament, with no change seen on Valsalva maneuver.

Case Report

An 18-month-old female was brought to the hospital by her parents on account of a 4 months old painless, progressively increased swelling in the left inguino-labial region. No associated history of fever, vomiting nor change in bowel habits. It was mildly pink on appearance, nonreducible, fluctuant and nontender on clinical examination. Abdomino-pelvic ultrasonography was done, and it showed an anechoic cystic lesion in the left inguino-labial region. This cyst contained a heterogeneous tubular structure. Magnetic

resonance imaging (MRI) was advised for further evaluation. It showed a well-defined, cystic sac-like tubular lesion in the left inguinal region, extending into the left labia majora [Figure 1]. This lesion measured approximately 5.5 cm (craniocaudal) × 1.8 cm (transverse) × 1.0 cm (anteroposterior) in dimension. It was hypointense on T1-weighted imaging (T1-WI) [Figure 1b] and hyperintense on T2-weighted imaging (T2-WI) and short tau inversion recovery [Figure 2]. There was a heterogeneous tubular structure seen inside the sac, which appearance resembled the round ligament and ovary [Figure 1c]. There was suggestion that part of the uterus also herniated into the sac [Figure 2c]. Surgery was done the next day. This revealed a hydrocele of the canal of Nuck with herniation of the round ligament, left ovary and part of the uterus in the sac.

Discussion

Hydrocele of the canal of Nuck is an uncommon condition, first described in the 17th century by the Dutch anatomist Anton Nuck van Leiden.^[2] Evagination of the parietal peritoneum along with the round ligament through the inguinal ring into the inguinal canal forms the canal of Nuck by 6th month of gestation in females. It is the female counterpart of the processus vaginalis in males.^[3,4] Complete obliteration of canal of Nuck usually occurs by the 1st year of life.^[1] If the processus vaginalis does not close, it is called a patent processus vaginalis. If small, it will only allow peritoneal fluid to pass which will collect and form a communicating hydrocele, but when larger it will permit abdominal organs to protrude, hence called a hernia.

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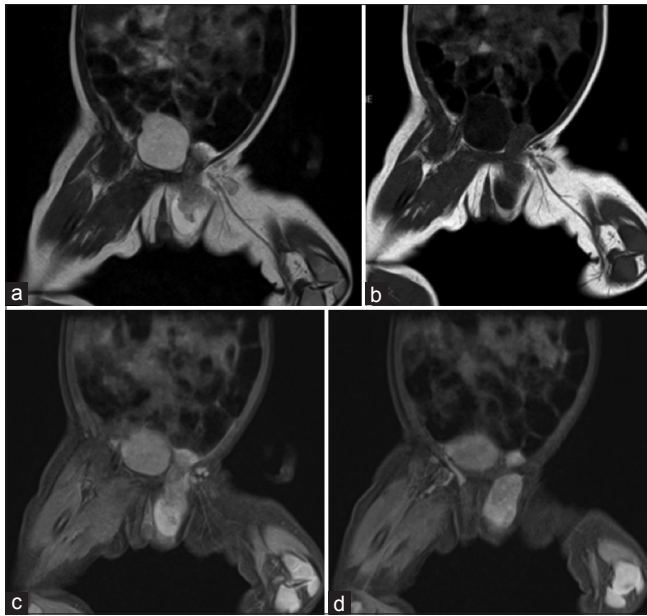


Figure 1: Coronal T2-weighted imaging, T1-weighted imaging (T1-WI) and short tau inversion recovery magnetic resonance images shows a hyperintense tubular structure in the left inguinal canal extending to left labia majora (a, c and d) with hypointense heterogeneous structure inside (a and c). This lesion is hypointense on T1-WI (b)

Many physicians are not aware of this uncommon condition called the canal of nuck, because of the lack of literature in surgery and gynecology text books.^[5-7] It is commonly mistaken as an inguinal hernia.^[8,9] However, inguinal hernia and hydrocele of the canal of nuck can coexist in $\frac{1}{3}$ rd of patients.^[10] Hydrocele of the canal of nuck typically presents as a painless swelling in the inguinolabial region, however, can be painful in a setting of infection. The etiology of hydrocele of the canal is a complete or partially patent processus vaginalis with an imbalance in absorption and secretion of the epithelial lining. High-resolution ultrasonography is the primary investigation, which shows a well-defined, hypoechoic or echo-free tubular anechoic lesion or 'cyst within the cyst' appearance.^[1,4,8] The most common differential diagnosis is an inguinal hernia. Other differential diagnoses are femoral hernia, femoral lymph nodes, cyst or abscess. There are limited reports on the MRI findings of the canal of nuck. Available literature reports findings of cystic tubular structure in the inguinal area, which are hypointense on T1-WI and hyperintense on T2-WI; internal septations may be seen.^[10] Treatment of hydrocele of the canal of Nuck is surgical excision and ligation of the neck of the processus vaginalis.^[11]

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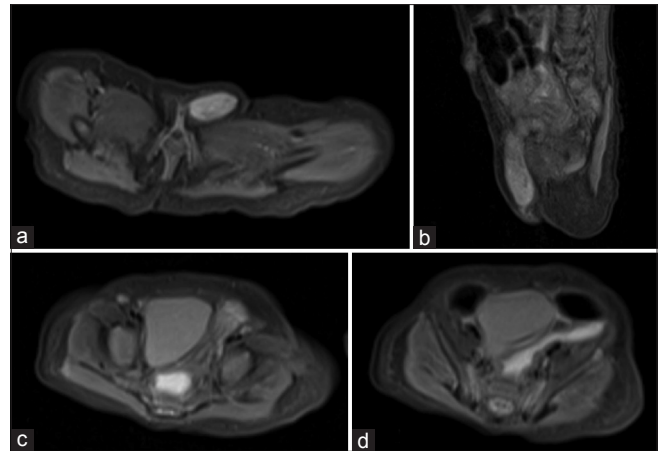


Figure 2: Axial short tau inversion recovery (STIR) magnetic resonance imaging (MRI) and sagittal STIR MRI images shows fluid filled sac with a heterogeneous structure in the left inguinal canal extending to left labia majora. There is suggestion of round ligament and part of uterus herniated into the sac

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