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"CASE SERIES OF HERNIA AND HYDROCELE OF THE CANAL OF NUCK "

Radiology

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ABSTRACT

Hydrocele of the canal of Nuck, also called the "female hydrocele," is a rare developmental disorder in females. Herniated sac in canal of nuck may contain adnexal mass or uterus. The processus vaginalis accompanies the round ligament through the inguinal canal into the labium majus. This evagination of the parietal peritoneum forms the canal of Nuck in the female. The canal of Nuck normally loses its connection with the peritoneal cavity during the first year of life, but can result in a hernia or hydrocele when the connection of the canal of Nuck fails to close. Here, we present the **(Case 1.)** of a 16 months old female who complained of swelling in the left inguinal region. Usg revealed (5.5 x 2.6) cm2 sized anechoic lesion with few incomplete septations in left inguinal region. No definitive extension of the lesion within the abdominal cavity which were suggestive of hydrocele of canal of Nuck. Coronal and axial magnetic resonance imaging (MRI) revealed approximately 1.8 x 2.6 x 5.5 cm3 (AP X TR X SI) sized elongated tubular shaped cystic lesion in left inguino-labial region.

(Case 2.) A 4 months old female patient presented with left inguinal swelling. USG revealed herniated sac measures (4.3 x 2.1) cm2 sized containing uterus and ovary.

KEYWORDS:

Hydrocele of canal of nuck, Hernia of canal of nuck, Ultrasonography

INTRODUCTION

A hydrocele of the canal of Nuck is the female equivalent of a spermatic cord hydrocele in males; thus, this entity is called the "female hydrocele" [1, 2]. The processus vaginalis arises as an evagination of the parietal peritoneum. During embryogenesis, the processus vaginalis accompanies the round ligament or testis as it passes through the inguinal canal into the labium majus or scrotum, respectively [3]. The canal of Nuck normally undergoes complete obliteration during the first year of life, and its failure to do so may result in an inguinal hernia or a hydrocele.

CASE REPORT

Case 1.

A 16 months old female presented with swelling in the left inguinal region. The left inguinal bulge protruded with coughing and gradually became more conspicuous over the last 4-5 months. The painless bulge had persisted for 4-5 months prior to her presentation. On physical examination, a soft mass measuring approximately (5.0 x 2.0) cm2 in diameter was palpable in the left inguinal region. Patient's vital signs and laboratory data were normal, with no history of local trauma noted. Abdominal sonography did not reveal any abnormalities. High-resolution sonography (with a 5- to 10-MHz linear array transducer on LOGIQ F8 machine; GE Medical Systems) of her left groin disclosed, within the left inguinal canal, an ovoid anechoic lesion measuring (5.5 x 2.6) cm2 with few incomplete septations and a fine echogenic margin. There was no connection with the abdominal cavity. Lesion not bulged or moved with coughing or with straining at stool. No vascular internal flow was demonstrable on a color Doppler examination.

MR imaging of the pelvis was performed with a 1.5-T magnetic resonance imaging (MRI) system (MAGNETON Essenza 1.5 Tesla MRI Scanner from SIEMENS which revealed approximately 1.8 x 2.6 x 5.5 cm3 (AP X TR X SI) sized elongated tubular shaped cystic lesion extending along the course of the left round ligament in left inguino-labial region. No definitive extension of the lesion within the abdominal cavity was seen. All findings were suggestive of hydrocele of canal of Nuck.

Case 2.

A 4 months old patient presented with swelling in left inguinal region. Bulge protruded with coughing and swelling was painless. Clinical examination revealed soft tissue mass palpable in left inguinal region.

High resolution sonography of left inguinal region revealed an ovoid anechoic lesion measuring (5.5 x 2.6) cm2 sized which containing uterus and ovary in it. Vascular Doppler was performed demonstrating normal vascularity pattern of uterus and ovary.

DISCUSSION

Case 1.

Clinically, a hydrocele of the canal of Nuck can appear either as a painless or a moderately painful fluctuant inguinal mass, with no accompanying nausea or vomiting; therefore, it is not easy to diagnose this entity on clinical findings alone. These masses are not reducible and, if large enough, can be transilluminated. When the peritoneal evagination remains completely Patent, it forms an avenue for an indirect inguinal hernia. Partial proximal obliteration, which leaves the distal portion of the processus vaginalis open, creates the anatomic prerequisite for a hydrocele of the canal of Nuck [4–6].

Ultrasonography is often used for the initial imaging of inguinal lesions. In previous reports, ultrasonographic findings of a hydrocele of the canal of Nuck have been described as a comma shaped lesion with its tail directed toward the inguinal canal, a "cyst within a cyst" appearance, and a multicystic hydrocele.

The MRI findings for the canal of Nuck hydroceles have been reported for a few patients in which hydrocele appeared as a thin-walled, tense cystic mass in the inguinal area. A hydrocele of the canal of Nuck has low intensity in T1-weighted images and high intensity in T2-weighted images. MRI reveals that these hydroceles extend both within and outside the inguinal canal and demonstrates the extension of the hydroceles very well, which allows for successful surgical excision.

There are many causes of swelling in the female inguinal region, including inguinal hernia, tumors (lipoma, leiomyoma, and sarcoma), cysts, abscesses, and lymphadenopathy. When a hydrocele occurs in the vulva, the differential diagnosis should include a Bartholin gland cyst and a Gartner duct cyst.

Case 2.

For hernias of the canal of Nuck, the peritoneal contents, including the bowel, omentum, fluid, and urinary bladder, can herniate into the inguinal canal. In female patients, the sliding inguinal hernia contains the ovary with or without the Fallopian tube in 15% to 20% of cases.

Although ovary-containing hernias of the canal of Nuck can be discovered at any age, they are most common in children. Inguinal hernias are more common on the right side, occurring in approximately 60% of cases, with 30% on the left side, and 10% bilateral. Ultrasonography is an easily applied and highly accurate imaging

modality. Ultrasonography with a high-frequency transducer is the imaging modality of choice for evaluating the inguinal lesion. It provides excellent spatial resolution and assists in the identification and characterization of inguinal lesions. The ultrasonographic finding of solid masses containing multiple cysts of varying size is a useful sign for the identification of ovary containing hernias.

Early diagnosis is important when the hernia contains an ovary, because incarceration of the ovary is common. Incarcerated ovaries in infants are at risk of torsion. If torsion of the ovary occurs, the venous and lymphatic return of the ovary within the canal of Nuck is impaired, causing increased swelling and pressure. This is usually accompanied by symptoms such as severe irritability, abdominal pain, and vomiting. Gangrene and tissue necrosis of the ovary supervene if the hernia is not reduced. Ultrasonographic findings of ovary torsion are an enlarged, mass-like ovary with heterogeneous echogenicity that contains multiple peripheral cysts and no blood flow within the ovary.

CONCLUSIONS

In conclusion, an ovary-containing hernia of the canal of Nuck is a rare type of inguinal mass. Ultrasonography is very helpful in diagnosis of inguinal swelling and identification of hernia of canal of nuck.

Case 1.

USG revealed a cystic lesion extending from left lateral wall of urinary bladder up to left labium majus and MRI revealed the uninterrupted cystic lesion extending from the inguinal region to the pelvic cavity. The USG proved to be incredibly useful for surgical planning.

Case 2.

Ultrasonography may be helpful for the diagnosis of ovary and uterus containing hernias of the canal of Nuck by detection of solid masses containing small cysts and solid organ with endometrial tube like structure noted in it. Even without signs of strangulation, hernias containing ovaries should be managed with early surgical reduction after the detection of an ovary within the hernia sac.

Case 1. Figures :

(Above figure shows left inguinal swelling)

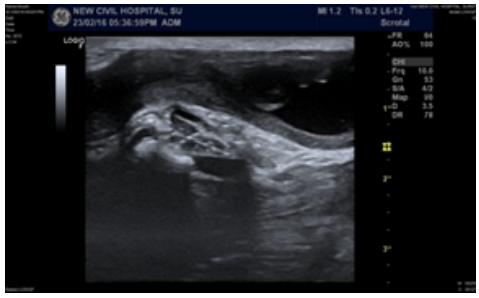
(Figure shows cystic anechoic lesion with few septations within)

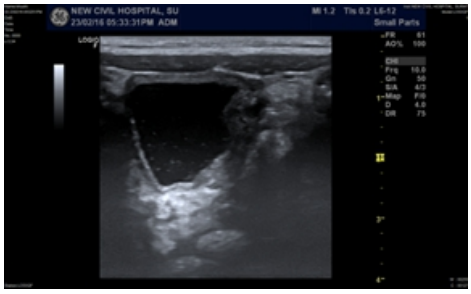
Above figure shows T2 W images coronal and Saggital section which shows hyperintense well defined lesion in left inguinal region)

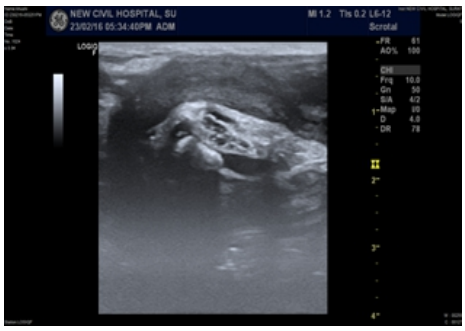
(T1W image axial section shows hypointense lesion in left inguinal region)

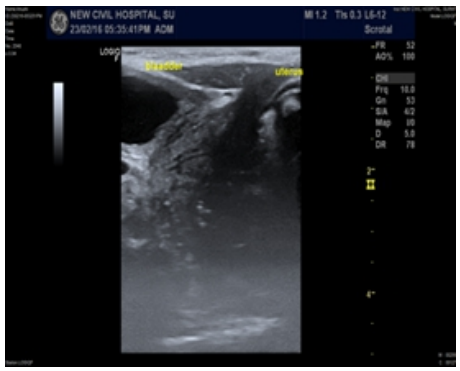
(post operative image)

Case 2. Figures :

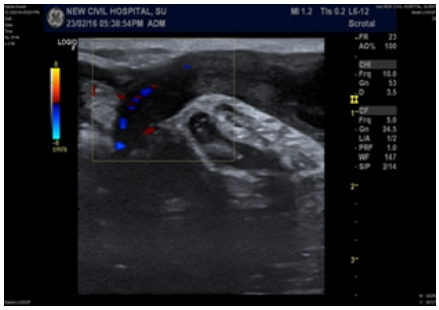


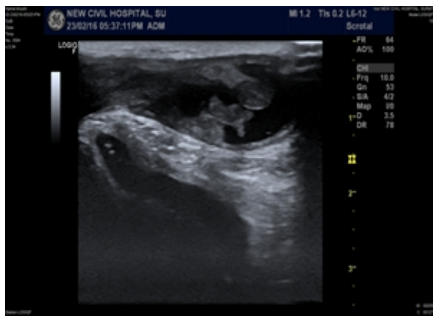






(Above figures shows anechoic cystic lesion in left inguinal region left lateral to urinary bladder with herniation of uterus within)





Herniated ovaries

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