Functional medicine

Canal of Nuck hydrocele in an adult female

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Introduction

A Canal of Nuck cyst, more often called a female hydrocele, is an exceedingly rare complication of an anatomic defect due to a patent processus vaginalis in females. Historically, it has been observed more often in pediatric patients, but with increased awareness, more cases of adult diagnoses have been made.\textsuperscript{1}

Case presentation

A 33-year-old female presented with a two-year history of a painful left inguinal mass. The patient noted that the mass changed in size over time and became larger throughout the day or with exercise. There was discomfort in the left groin when she exercised, coughed, or crossed her legs. These symptoms became exceedingly worse over the past two years and have started to affect her quality of life. The patient denied any previous hernias, lower urinary tract symptoms, or prior urinary tract infections. Her past medical history was significant only for pancreatitis. Genitourinary exam was appreciable for a small, round mass lateral to the left pubic tubercle that was not reducible. No abdominal wall defect was palpable and there were no overlying skin changes.

Computed tomography (CT) of the abdomen and pelvis as well as a trans-vaginal ultrasound (US) were conducted two years prior when she initially became symptomatic. These imaging modalities showed no evidence of a hernia but did show a 1.1 cm fluid collection over the palpable groin mass, which was interpreted as being within the Canal of Nuck. A repeat US of the groin two years after initial presentation showed a 2.7 × 0.8 × 2.4 cm fluid collection over the palpable left groin mass (Fig. 1).

Elective surgery was undertaken for management of the patients' palpable mass. Laparoscopic exploration of the peritoneal cavity was initially conducted, followed by open repair through the inguinal canal. The laparoscopic exploration showed a small indirect inguinal hernia of about 0.5 cm in diameter, but no fluid filled sac was visualized. Next, exploration of the left groin through the inguinal canal was conducted. This showed a fluid-filled sac that traversed the inguinal canal that ended blindly at the internal inguinal ring (Fig. 2). The sac was excised and correlated to a Canal of Nuck hydrocele. Pathologic evaluation of the sac confirmed the diagnosis of a hydrocele (Fig. 3). The patient's pain has resolved in its entirety at her one-month follow-up.

Discussion

The pathogenesis of a Canal of Nuck hydrocele derives from a defect with embryologic development within the inguinal canal. This open space has its origins from a patent processus vaginalis, analogous to a patent processus vaginalis leading to the more common male hydrocele. Typically, the cephalic part of this structure obliterates before birth with the entire structure closing by the time an infant is a 1 year-old.\textsuperscript{1} If this fusion of the processus vaginalis does not occur, it leaves a potential space, the Canal of Nuck, which could lead to hydrocele formation. The anatomically normal contents of the inguinal canal in females include the round ligament, the ilioinguinal nerve, and the genital branch of the genitofemoral nerve. Understanding the anatomy and development of this region is crucial to helping expand the differential diagnosis in a female that presents with a groin mass.

Canal of Nuck hydroceles are more often seen in children, but there is an increasing amount of documented cases in adults.\textsuperscript{2} Due to the

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rarity of such a diagnosis, they can be mistaken for more common entities such as inguinal hernias, lymphadenopathy, Bartholin’s gland cyst, abscesses, or tumors. Bunting et al. suggest an initial laparoscopic approach for repair of a suspected hernia as it can be used to either treat the hernia or diagnose other pathologies by direct visualization, as was done in our case.

Varying radiographic modalities, including MRI, CT, and US can be used individually or in combination to provide support for a Canal of Nuck hydrocele as opposed to other entities on the differential. As in our case, sonography proves to be a very powerful tool in elucidating the features of the hydrocele, especially in comparison to hernias. A Canal of Nuck hydrocele will show various characteristics on US including no vascularity on color Doppler, a thin wall, anechogenicity to hypoechogencity, and cystic or multicystic appearance. Pathologic evaluation will show findings similar to a benign hernia sac.

Conclusion

Here we demonstrate the very rare case of a canal of Nuck hydrocele. While our patient underwent elective operative management for treatment, this may not always be the circumstance. In such cases as infections, tumors, or herniation into the Canal of Nuck, more urgent operative management may be warranted.

The relevance of our discussion is to expand the potential differential diagnosis of female groin masses as this entity may easily be overlooked upon initial evaluation. We recommend correlating the clinical findings with ultrasound findings to establish a diagnosis and determine whether further intervention is necessary.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.01.004.

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