Mangement Challenges of Epididymal Cysts in Children

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Abstract

Purpose: We prospectively studied the outcome of conservative management of epididymal cyst in children at our institution.

Material and Methods: We prospectively studied the outcome of twenty patients with epididymal cyst from 2007 to 2012 attending the outpatient clinic of the general surgery and urology department of El-Sahel Teaching Hospital. Age and mode of presentation as well as time to complete involution of the cysts were studied. Diagnosis of epididymal cyst was confirmed by scrotal ultrasound in all cases.

Results: A total of 20 patients were identified with epididymal cyst. Average patient age at presentation was 11.5 years. Sixteen patients presented with scrotal mass and 4 with scrotal pain. Cysts were between 3 and 30mm. Only one patient required surgical excision due to persistent pain. Epididymal cysts resolved in 17 patients who completed follow-up. Average time to complete regression was 19 month. None of our patients had a history of exposure to diethylstilbestrol, cryptorchidism, and cystic fibrosis or von Hippel-Lindau disease.

Conclusions: Our findings imply that most epididymal cysts involute with time.

Key Words: Epididymis – Cysts – Spermatocele – Environmental exposure.

Introduction

AN epididymal cyst is fluid filled swelling of epididymis. The epididymis is a coiled tube on top of and behind the testicle, which stores and then carries sperm away from the testicle. The cysts are usually small, do not cause pain and are harmless however, they can be multiple can occur in both testicle. They are more common in men over the age of 40. Epididymal cysts in children and adolescents are usually benign lesions diagnosed during evaluation of scrotal mass or pain by ultrasound. Historically epididymal cysts have been reported in association with diethylstilbestrol (DES) Use [1,2]. This epididymal abnormality has also been reported in association with cryptorchidism, cystic fibrosis and von Hippel Lindau (VHL) disease [3].

The etiology of epididymal cysts is not known with certainty. Embryologically the epididymis is formed from mesonephric tubules (head) and mesonephric duct (body and tail). Epididymal development is primarily androgen dependant [4]. As reported in males exposed to DES during embryonic development, any disturbance in hormonal milieu potentially results in the formation of epididymal abnormalities including the development of epididymal cysts. There is much recent interest in the possibility that environmental endocrine disrupters are responsible for the increased incidence of male reproductive problems including epididymal abnormalities [5].

Management of epididymal cysts depends on the clinical presentation, length, severity of symptoms and urologist preference.

Aim of the study:

We prospectively studied the clinical presentation of children diagnosed with epididymal cysts at our institution and evaluated management outcome.

Material and Methods

All patients diagnosed with epididymal cyst at our institution from 2007 to 2012 were enrolled in the study. Patient age, clinical presentation and mode of the diagnosis at presentation were studied prospectively. The diagnosis of epididymal cyst was confirmed by observing an echo-free cystic structure on epididymis with ultrasound of scrotum in all patients. There were 20 patients available for evaluation with a mean follow-up of 19 month and range of 3 months to 4 years. All patients were followed conservatively, had repeat ultrasound at 4 months for the first year and then every year until the epididymal cyst was absent or cyst was 2mm or smaller.

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Results

There was no history of cryptorchidism, cystic fibrosis, VHL, exposure to DES or urinary tract infection in any of our patients. The most common clinical presentation was incidental finding on routine physical examination then subsequent confirmation by scrotal ultrasound (in 7 patients) scrotal mass detected by the patient (in 8 patients) and scrotal pain (in 4 patients) were other presenting features. One patient was incidentally found to have an epididymal cyst after evaluation of a blunt trauma to lower abdomen (Fig. 1).

Average age at presentation was 11.5 years with a range of 3 months to 17 years. Age at presentation was bimodal with the younger group age between 3 month and 4 years, and the peripubertal age group from 10 to 17 years.

Of the 20 patients 17 completed follow-up were discharged from our clinic after involution of epididymal cysts. Of these patients one required surgical excision of the cyst due to persistent scrotal pain. Three patients were lost to follow-up. Average time to complete involution of cysts was 19 months, ranging from 3 to 50 months. There was no association between cyst size and time to eventual resolution. Cyst size was between 3 and 30mm. There was no difference between right and left epididymal in harboring the cyst. Epididymal cysts were bilateral in 4 cases. Two patients had an increase in cyst size during early follow-up. In both cases the epididymal cysts later regressed. Associated genitourinary anomalies including hypospadias (in 2 patients), neonatal torsion and vesicoureteral reflux were present in 4 patients (Fig. 2).

Discussion

Ultrasonography has a prime role in the diagnosis and follow-up of scrotal pathology including epididymal cysts. Epididymal cyst appears as an echo-free cystic structure on ultrasound. The ultrasonographic features of epididymal cyst are similar to those of spermatocele in the post-pubertal male. The only means of differentiating epididymal cyst from spermatocele is aspiration of the cyst with presence of sperm in the latter [6]. In fact the histological structures and fluid composition of both lesions are similar [7]. In our study the presence of sperm in the only excised cyst was consistent with the diagnosis of spermatocele. A review of the literature reveals that the terms "spermatocele" and "epididymal cyst" have been used interchange-
ably to describe the same pathology on many occasions. Since there are no absolute means of differentiating these 2 lesions except aspiration, it may be that spermatoccele is simply an epididymal cyst that presents in a different age. It is also not clear if the structure of their origin is different. Wollin et al., have described epididymal cyst as a structure that originates from vestigial remnants of epididymis that is not communicating with epididymal tubules [8].

Whether these remnants are mesonephric or mullerian in origin is not known. It is reasonable to assume that epididymal cysts could originate from both remnant types.

McLachlan et al. [9], suggest that epididymal cysts derived from fetal estrogen exposure can be identified as of mullerian (paramesonephric), not mesonephric origin by detecting lactotransferrin, an estrogen dependent protein found only in mullerian tissue.

Recent reviews also suggest that epididymal cysts may be part of the testicular dysgenesis syndrome in which male genitourinary anatomy and function are adversely affected by a wide variety of endocrine disrupters acting transplacentally during male fetal development [10-12]. If the testicular dysgenesis syndrome is valid one would predict that the epididymal cysts observed prepubertally or peripubertally would be lactotransferrin positive that is, derived from mullerian tissue [9].

Epididymal growth and development are androgen dependent. Epididymal epithelium is dependent on a relatively high concentration of androgens for normal function. This dependence includes secretory activity, fluid resorption and cytological integrity [4].

As a result of an increase in congenital anomalies including epididymal cysts in children born to women exposed to DES during pregnancy, orally active estrogens have been banned from widespread use [1]. In spite of the ban on DES in the early 1970 epididymal cysts are still frequently diagnosed during evaluation of scrotal mass or pain in children. This apparent increase in the number of cases with epididymal cysts raises the question of possible increases in exposure to estrogenic compounds in the environment [13]. Dietary ingestion of phytoestrogens or the use of recreational drugs (cannabis) may be other possible causes for our observations.

It is important to note that other male genital deformities such as hypospadias and undescended testes are also reported to be increasing in frequency, perhaps from similar causes [14,15]. While most investigators conclude that environmental estrogens are quite weak in terms of receptor stimulation, it is important to consider that many of these compounds have been shown to have synergistic effects in vitro [16]. Theoretically it is also important to consider the timing and duration of exposure to these compounds, prenatal or postnatal that may affect epididymal anatomy and, therefore, age at presentation.

Vasal or epididymal obstruction has been evaluated as a cause for the development of epididymal cysts. Jarvis and dubbins have suggested that epididymal obstruction can lead to epididymal congestion and inflammation with secondary cyst formation [17]. In contrast, direct measurement by micropuncture of epididymal and seminiferous tubule did not show increased hydrostatic pressure in the distal epididymis after vasectomy [18].

Epididymal anomalies including epididymal cysts are common in cryptorchid testes [19]. Whether epididymal obstruction or an abnormal hormonal response is the cause of cyst development in these testes is not known.

Expression of vascular endothelial growth factor in von Hippel-Lindau disease is associated with papillary cystadenoma of epididymis [3]. None of our patients had a history of cryptorchidism, cystic fibrosis, VHL or exposure to DES.

The functional significance of epididymal cyst is not known. We observed that in most cases cysts regress with time and do not require surgical intervention. There are no guidelines for surgical intervention for epididymal cysts.

Surgical excision poses the risk of recurrence of the cyst or obstruction of the epididymal duct and should be reserved for persistent or worsening symptoms. Only one patient in our study required surgical intervention for persistent scrotal pain with no evidence of recurrence during follow-up.

Cyst aspiration with sclerotherapy has been used for the treatment of epididymal cysts in adult patients with variable results [20]. Its use in the pediatric population has not been studied.

Conclusions:

Epididymal cysts are benign lesions with possibly increasing frequency especially in peripubertal male. Although they have been linked to hormonal disruption, the exact pathogenesis is not clear.
They mostly present with scrotal pain, mass or incidentally during routine physical examination. Ultrasound of the scrotum is the most reliable means of diagnosis. Aspiration of the cyst to differentiate epididymal cyst from spermatocele is rarely indicated. Conservative management will result in complete regression of most cysts.

References


