ABDOMINOSCROTAL HYDROCELE, AN UNDERESTIMATED ENTITY

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Abstract
Abdominoscrotal hydrocele (ASH) is a very unusual variety of hydrocele in childhood. The incompletely elucidated etiology and its possible serious complications make ASH a moreover debated topic of pediatric urology. Although, underestimated intraoperative difficulties or incomplete preoperative evaluation constitute ASH as a complex entity and misjudging as a simple hydrocele should be avoided.

Key words: Abdominoscrotal hydrocele

Introduction
Abdominoscrotal hydrocele (ASH) is an hourglass-shaped hydrocele consisting in two pouches (an inguinoscrotal component and an abdominal part) who communicate through the internal inguinal ring [1]. This type of hydrocele is very uncommon in adults and even more unusual in the pediatric population. It’s reported incidence is about 0.17-3.1% of all hydroceles [2,3]. Etiology and pathogenesis of ASH is not clear. Association with other severe genital or urinary abnormalities makes ASH a challenge for the surgeon. We report our experience with this particular type of hydrocele (3 cases) trying to point out particular elements in their management.

Case #1
A 14 month old boy referred to our department for a bilateral impressive scrotal tense enlargement, noted since birth. The ultrasonography revealed bilateral intra-abdominal extension as a cystic mass above the both internal inguinal rings. The patient was operated on the both sides using inguinal approach. We noted the important compression of both testes and their lax, fusiform aspect. We also observed the congestion of the tunica vaginalis, the dissection being very difficult in matter of hemostasis. The patient suffered an immediate postoperative acute hemorrhagic anemia (Hb: 6 g/dL). Intravenous iron was supplemented and the patient was reoperated in order to perform hemostasis. Bilateral drainage tubes were inserted and maintained for 5 days. Persistent bilateral inguinal swelling was noted after the surgery.

Case #2
A 10 month old infant presented to our clinic for an important congenital right scrotal tense swelling. The US revealed the cystic intra-abdominal extension of the hydrocele. The patient was operated through an inguinal incision, after an initial evacuation of the hydrocele fluid. The intraabdominal component of the tunica vaginalis could be dissected and removed together with its inguinoscrotal part. We noted that the testes were compressed and stretched, having a dysmorphic aspect. Postoperative, an important inguinoscrotal hematoma has developed an haemorrhagic anemia was confirmed by the lab tests (Hb: 8,3 g/dL). Finally, the evolution was favourable with conservative management.

Case #3
A 8 month old infant was admitted in our clinic for an impressive right scrotal tense swelling (Fig. 1). On anamnesis, we found that the swelling was known since birth and it increased progressively in size. The US suggested concomitant presence of a cystic image above the right internal inguinal ring. The MRI confirmed the diagnosis of ASH, showing the hourglass-shaped hydrocele (Fig. 2). Also, the right testicle couldn’t be detected on the MRI.

We performed the hydrocelectomy via a inferior inguinal crease incision after the transscrotal punction and evacuation of the serous clear fluid (220 ml). Intraoperative, no PPV was found. We managed the blunt dissection of the hydrocele, extracting its intraabdominal pouch through the widened transected internal inguinal ring (Fig. 3). The testis was compressed and elongated, having a fusiform aspect (Fig. 4). We removed the thickend tunica vaginalis as much as possible preserving the spermatic cord elements. Right orchidopexy was also performed. A inguinoscrotal drainage tube was inserted and maintained for 3 days. Postoperative, despite the careful hemostasis a significant inguinoscrotal swelling was noted for 14 days. Finally, the evolution was satisfying.

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Discussions
Depending on the obliteration pattern of the processus vaginalis, various types of hydroceles are described: congenital or intermittent hydrocele, scrotal hydrocele, spermatic cord hydrocele, inguinal-scrotal hydrocele or abdomino-scrotal hydrocele. ASH is considered a large scrotal hydrocele that protrudes through the deep inguinal ring into the abdominal cavity.
determining the hourglass or dumbbell shape. [4] The intra-abdominal component usually lays peritoneal, but retroperitoneal position of the intra-abdominal element has been reported [5,6].

Etiology of ASH is stated in different theories. A high obliteration of the processus vaginalis, near the internal inguinal ring associated with fluid accumulation in the tunica vaginalis ascending through the inextensible musculofascial coverings of the inguinal canal and consecutive protrusion in the abdominal cavity is the most agreed theory. Other assumptions include the existence of a valve-like mechanism in the patent processus vaginalis at the level of internal inguinal ring, a peritoneal diverticulum in the deep inguinal area, or distal expansion of an abdominal hydrocele in the inguinoscrotal space. [6] Existence of a patent processus vaginalis (PPV) should be evident in most of the cases reported, but only a few authors report the existence of this communication, so mentioning of PPV in ASH description is considered an element of misdiagnosis. Confusion between PPV and the slim part of the ASH which passes the internal inguinal ring is usually made [6, 10].

Careful examination can bring important clues over the nature of hydrocele. Bimanual (scrotal and abdominal) palpation of a large, tense hydrocele identifying one component’s enlargement when compressing the other is a maneuver which can presume the existence of an ASH. Also, manual reduction of the hydrocele can result in a temporary diminishing of its size [9]. ASH’s most obvious differential diagnosis is inguinal hernia [6]. Diagnosis can be easily confirmed by ultrasound examination, but use of CT or MRI for supplementary evaluation is reported and indicated in the presence of large scrotal hydrocele [3, 6, 9]. Estevao-Costa, et al. reported acute haemorrhagic ASH [7], Velasco AL, et al. mentioned a paratesticular malignant mesothelioma of the tunica vaginalis [8], or Gentile DP, et al. mentioned ASH as a cause of ureterohidronephrosis in infancy [5].

Testicular dysmorphism (TD), most probably because of the increased hydrocele pressure, has been reported in ASH cases. Vaos G, et al. study draws attention over cases of infantile ASH with normal testes, so it’s difficult to enounce TD a congenital gonad abnormality or a secondary effect of ASH in pediatric population. [11] Secondary ureterohidronephrosis, lymfedema, intralesional hemorrhage, infection, cryptorchidism, crossed testicular ectopia, or paratesticular malignant mesothelioma are associations of ASH summarized by Cuervo JL, et al. in its study. [6]

Periodic US evaluation of a large scrotal hydrocele is indicated in order to prevent apparition of ASH. Surgical treatment is the treatment of choice as soon as ASH is confirmed in order to prevent compression over local abdominal or inguinoscrotal structures and its presumed consequences [9]. In 2006, Upadhyay V, et al. report a case of spontaneous resolution of ASH [11]. In the same year, De Renzo CC et Barone JG underline the natural remission of the intraabdominal pouch in a case of infantile ASH [13].

Although paramedian laparotomies or scrotal approaches in surgical treatment of ASH have been reported, simple inguinal hydrocelectomy is considered the best choice [6, 9, 14]. Laparoscopic assistance is indicated to be reserved in cases with associated abnormalities like contralateral nonpalpable testes or recurrent hernia [3].

Surgery in ASH doesn’t assume a simple procedure, summarizes Cuervo JL, et al. Large, tense, protruding, thickened wall hydrocele makes difficult the separation of surrounding structures (like spermatic cord elements). Transscrotal aspiration of the fluid before the hydrocele dissection starts makes the surgery easier. Transection of the vas deferens or difficult hemostasis with postoperative hematoma has been reported. As ASH is not a communicating hydrocele, confusion between PPV and intraabdominal extension can be made. Also, insufficient excision of the pathogenic tunica vaginalis can result into recurrent hydrocele [6, 9].

Conclusions
ASH remains an unclear topic in pediatric urology. We assume that a large scrotal hydrocele associated with fluid accumulation and consequent upward herniation through the internal inguinal ring is the etiology of ASH, on account of we found no PPV in our cases.

The MRI brings valuable information over the extension of the hydrocele and its effect over the underlying structures. Intraoperative testis evaluation should always be performed since several cases of dysplasia have been reported. The thickened tunica vaginalis and its inflammatory aspect sometimes can result into important bleeding which can lead to large hematomas or even severe anemia. We recommend accurate hemostasis preferable using bipolar cautery and postoperative inguinoscrotal drainage. On the other hand, the hydrocele by its size can change the anatomy of the spermatic cord, scattering and compressing its elements, so their careful individualization and dissection can avoid serious complications, like transection of vas deferens or devitalisation of the testis. Our limited experience with bilateral ASH indicates that staged surgery may be safer.

References

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