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Cause and Management of Hydrocele: A Review Article

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ABSTRACT *Abnormal collection of serous fluid between the visceral and parietal layers of the tunica vaginalis is termed as hydrocele. It is the commonest reason for painless scrotal swelling and affects about 1% of men, mostly above forty years of age, and 4.7% neonates. Normally it is idiopathic in origin, yet infection, variococelectomy, inguinal surgery, a patent processus vaginalis and trauma are linked with its consequent expansion. The diagnosis is usually clinical. Taking a thorough history is essential to rule out any fluctuation in size, which is an indication of a patent processus vaginalis. Hydroceles can be treated through surgical resection with an inguinal method, a combination of thrombolytic therapy, catheter drainage and subsequent alcohol ablation, or through sclerotherapy and aspiration.*

Introduction

Abnormal collection of serous fluid between the visceral and parietal layers of the tunica vaginalis is termed as hydrocele. It is the commonest reason for painless scrotal swelling and affects about 1% of men, mostly above forty years of age, and 4.7% neonates.A hydrocele is an abnormal collection of fluid, usually serous, in the sac of the tunica vaginalis. It represents the most common complication after varicocele surgery [1]. It is common in newborn males. Most hydroceles in newborns are harmless and will resolve on their own by 12 months of age. The causes of hydroceles that develop in children are different from those in adults. The testicles initially develop in the abdomen. In most boys, they move down into the scrotum before birth. As they do this, some of the lining of the abdomen comes down as a sack containing the testicle. In most boys, the sack's connection to the abdomen is closed at birth, but in some boys it remains open. When it is open fluid produced in the abdomen can then freely move into the scrotum and back.

Hydrocele testis was described as early as the 15th century by ambroise Pare, and is defined as an abnormal collection of serous fluid in the space between the parietal and visceral layers of the tunica vaginalis, termed the cavum peritoneum scroti.[2] Hydrocele is the most common cause of painless nonacute scrotal swelling in men. the normal scrotum has been reported to contain 2–3 ml of fluid between the tunical layers. Oyen[3] reported that a limited hydrocele is found in as many as 65% of healthy men. Leung *et al.*[4] found that 86% of their subjects, a group of healthy volunteers, had minimal amounts of fluid in one hemiscrotum. The volume at which tunica vaginalis fluid becomes by definition a hydrocele is still a gray area. even in cases of an obvious hydrocele, the amount of fluid can be extremely variable between patients and can vary from a small and soft swelling to a large and firm scrotal lump.

At birth or within one year of birth, congenital hydroceles are present or usually caused due to incomplete or late closure of processus vaginalis. After a year of life, hydroceles occur due to venous and lymphatic obstruction due to infection or trauma [5]. However, most hydroceles have no recognizable cause as in a study, conducted on children having age of more than a year having new-onset hydrocele, a clear cause was observed in only twenty patients out of three hundreds and two [6]. In northern America, the common catching causes of hydroceles are viruses and epididymitis while filariasis is a major cause of hydroceles worldwide. There are certain other conditions as well which leads to hydroceles such as torsion of the testicle or testicular appendages, recent scrotal surgery or trauma[7]. Testicular cancer may also be considered, especially in men with onset of hydrocele in his 3rd or 4th decade of life. Approximately in ten out of hundred cases, testicular tumours are accompanied by a hydrocele making testicle vague and prevent a detailed examination of the case.

Types of hydrocele

To ascertain the probability of a hydrocele being either congenital or acquired in relation to patient age, Wilson *et al.* retrospectively assessed the presence of a patent processus vaginalis in children who underwent surgical hydrocelectomy. in general, the most common type of acquired hydrocele is idiopathic in origin.[8,9] idiopathic hydroceles are thought to be caused by an imbalance between the secretion and reabsorption of fluid within the closed sac of the tunica vaginalis.8,9 rinker and allen9 reported that patients with a hydrocele also had defective lymphatic filariasis,[10] a condition that results from infection with the mosquitoborne nematode parasite *Wuchereria bancrofti*. the infestation, quite uncommon in developed countries, typically presents from adolescence onwards and is estimated to affect over 50 million people in africa alone, representing an important public health problem in many developing countries. in endemic communities of africa, the prevalence of hydrocele increases with age and up to 20–30% of adult males have a hydrocele.[10] Hydrocele can also occur secondary to a vast array of other testicular conditions. About 50% of adult patients with a rapidly growing hydrocele are ultimately diagnosed with a malignant mesothelioma of the tunica vaginalis.

Clinical Manifestation

Hydroceles may differ in size but most of the cases are asymptomatic. Acquired hydroceles are usually developed gradually and are not that much alarming. Larger hydroceles may result in chronic pain in the scrotum or lower back and can cause injury to the scrotal contents such as the testicle [11]. Communicating hydrocele (discussed before) may be of small size each morning but grow bigger all over the day as the patient is upright. The marked feature

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on physical examination is a smooth, tense, scrotal mass that trans-illuminates easily. This can help distinguishing a hydrocele from a hernia or a mass, solid in nature. Communicating hydrocele might be present with indirect inguinal hernia. To assess the mass, the whole surface of testes should be palpated. If a thorough examination of the scrotal structures is prohibited by a size of the hydrocele or it does not trans-illuminate fully, then ultrasound can exclude testicular tumour as cause[12]. If the patient is symptomatic or its history along with his physical check-up advocates a causative process, then imaging must be ordered too. The ultrasound can display an inguinal hernia, accompanied by a communicating hydrocele.

Treatment

Non-communicating hydroceles are often resolved by two years of age in infants while it is resolved within six months in boys in approximately 75% cases. Alert wait is suitable for this population. In adults, hydroceles do not need treatment, if there is normal testicle or the patient remains asymptomatic. Conversely symptomatic or communicating hydroceles require proper treatment. Noncommunicating hydroceles can be treated through surgical resection through an inguinal method or through aspiration and sclerotherapy [13]. Sclerotherapy along with various agents such as polidocanol, phenol and thanolamine oleate, and aspiration is well documented. It is considered as safe and effective having a success rate of 58 % to 98 %. A mass literature is also present, reporting complication of sclerotherapy and aspiration up to 50%. A small non-randomized trial showed surgical resection as somewhat more effective than sclerotherapy and aspiration but was also having a higher rate of complications and was more costly [14].

Communicating hydroceles are treated surgically through resection and correction of the anatomic defect, which cause insistent association with the peritoneal cavity. A case of patient with recurring complex hydrocele and effective treatment utilizing a combination of thrombolytic therapy, catheter drainage and subsequent alcohol ablation is also been reported.

Conclusion

Acute scrotal pain is considered as one of the main diagnostic and therapeutic challenges. There are many such conditions that might present scrotal swelling. Hydrocele is of these conditions. A hydrocele is a collection of fluid in the layers namely parietal and visceral layer of the tunica vaginalis, due to fluid passage from peritoneal space into the scrotum. Hydroceles can be treated through surgical resection with an inguinal method, a combination of thrombolytic therapy, catheter drainage and subsequent alcohol ablation, or through sclerotherapy and aspiration.

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