ISSN: 2634 - 680X

Journal of Clinical Case Studies Reviews & Reports

SCIENTIFIC Research and Community

Case Report

Open Access

Unilateral Abdominoscrotal Hydrocele in a 38-year-old Adult with Chronic Portal Vein Thrombosis from Addis Ababa, Ethiopia

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ABSTRACT

Ascites with a communicating scrotal hydrocele is a rare clinical encounter. It occurs due to communication with the abdominal cavity through the inguinal canal. We report a case of a 38-year-old male with chronic portal vein thrombosis and portal hypertension, who presented with left abdominoscrotal hydrocele, at Adera Medical and Surgical Center (AMSC) in Addis Ababa, Ethiopia.

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Received: September 18, 2024; **Accepted:** September 24, 2024; **Published:** September 30, 2024

Introduction

A hydrocele is a collection of peritoneal fluid between the parietal and visceral layers of the tunica vaginalis, which directly surrounds the testis and spermatic cord. It can be congenital or acquired. Most pediatric hydroceles are congenital, while adults usually develop hydroceles secondary to infections (filariasis, tuberculosis), injuries, or surgery (post-herniorrhaphy) [1].

In cases where there is portal hypertension, portal pressure increases above a critical threshold and leads to vasodilation, which later increases the plasma level of vasoconstrictor hormones, leading to decreased renal function and ascitic fluid formation [2]. Ascites causes an increase in intraabdominal pressure. This increased intraabdominal pressure could give rise to a patent shunt that permits the flow of peritoneal fluid into the scrotum. The pathogenesis could be called abdominal-inguino-scrotal hydrocele [3].

Abdominoscrotal hydrocele (ASH) is a rare condition, constituting only 0.17% of all hydrocele cases. It was first described by Parcival-Pott in 1777 and given the name "l'Hydrocele en bissac" by Dupuytren. The widely accepted term "abdominoscrotal hydrocele" has been used since the beginning of the 20th century. ASH is most commonly seen in the pediatric age group of less than five years and in the second and third decade in adults. While it usually affects one side with right-side predominance, bilateral occurrences have also been reported [4, 5].

The diagnosis for ASH is made clinically through bimanual palpation. Cross fluctuation between the scrotal and abdominal swelling is pathognomonic, which can later be confirmed by ultrasonography [6]. Surgical treatment, which is the repair of the communicating shunt, is the treatment of choice, with a number of approaches being recommended [7].

Case Report

A 38-year-old male from Addis Ababa presented to our outpatient department on March 22, 2024, at AMSC with a complaint of progressive painless swelling of the umbilicus and left scrotum of three months duration. He had been on follow-up for chronic portal vein thrombosis with portal hypertension for the preceding five years. However, during the last two years, he ceased attending follow-up appointments until his recent presentation. Otherwise, he has no history of fever, urinary complaints, trauma to the scrotum area, or previous episodes of scrotal swelling.Upon physical examination he was chronically sick looking with stable vital signs. Abdominal exam revealed a reducible umbilical hernia and moderate ascites with few collaterals. Spleen was palpable 3cm below the left costal margin on its growth line. The left scrotum was tense and transilluminant with non-palpable testis and demonstrated cross-fluctuation between the abdominal and scrotal swelling. There was no local warmth or tenderness (Figure 1). The right testis was normal.

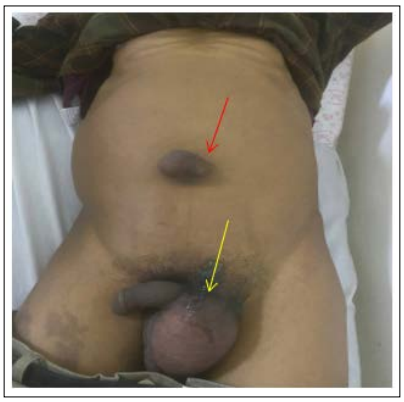

Figure 1: Image Showing Left Scrotal Swelling (Yellow Arrow) and Umbilical Hernia (Red Arrow), AMSC, March,2024

Laboratory investigations revealed a white blood cell count of 3100, haemoglobin of 15.5 g/dl, and platelet count of 84,000. Liver function tests, renal function tests, urinalysis, coagulation profile, serum albumin, and alpha-fetoprotein were all within the normal range. Abdominal ultrasound reported portal vein cavernous transformation and splenomegaly with portal hypertension and moderate free peritoneal fluid. Scrotal ultrasound revealed direct communication between the peritoneal cavity and left tunica vaginalis space with left hyrocele (Figure 2).

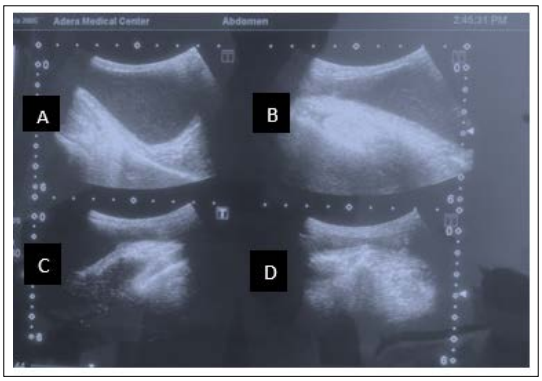

Figure 2: Ultrasound of the Left Scrotum Showing Communication of the Left Scrotal Cavity with the Peritoneal Cavity, AMSC, March,2024

With the diagnosis of chronic portal vein thrombosis with portal hypertension and left ASH he was started on diuretics and betablockers and the patient was referred to the surgical team for evaluation and management of the left ascites hydrocele. After a thorough preoperative assessment and counseling, the patient underwent an elective inguinoscrotal repair of the hydrocele.

During surgery, a large volume of fluid was drained from the scrotal sac, and a direct communication between the peritoneal cavity and the tunica vaginalis was confirmed. The peritoneo-scrotal shunt was surgically repaired, and the hydrocele sac was excised. The inguinal canal was reinforced with mesh to prevent recurrence.

Postoperatively, the patient had an uneventful recovery. He was monitored for potential complications,including infection, hematoma, or recurrence of the hydrocele. Follow-up ultrasound performed one month after surgery showed no signs of fluid reaccumulation in the scrotum, and the patient reported significant relief from his symptoms.

At the three-month follow-up visit, the patient remained asymptomatic with no evidence of recurrence. His portal hypertension was managed medically with diuretics and beta-blockers, and he was advised to continue regular follow-up for his chronic portal vein thrombosis.

Discussion

Hydroceles can be primary resulting from connection with the peritoneal cavity through a patent processes vaginalis (congenital) or secondary from excessive production of fluid, defective absorption of fluid, and interference with the lymphatic drainage of scrotal structures [1].

Adult hydroceles are usually secondary. The incidence is rising due to the increasing use of peritoneal cavity for peritoneal dialysis, ventriculo-peritoneal shunts, and renal transplants. Ascites commonly leaks up to the pleural cavity, causing hepatic hydrothorax, however, in rare cases, it may communicate with the tunica vaginalis and cause hydrocele like our case [3].

The pathogenesis of ASH has a controversy in which two mechanisms are proposed. One assumption is that fluid secreted by the tunica vaginalis results in increased intra-luminal pressure in the proximal processes vaginalis, which transmits through the internal inguinal ring and into the abdominal cavity. The mechanism aligns with Laplace's law, which states that as the radius of the fluid collection increases, the inward pressure decreases, allowing the fluid to continue expanding. This classic ASH is described as a scrotal-inguino-abdominal hydrocele [8, 9].

In our case, the left-side fluid-filled scrotum is likely secondary to communication with the abdominal cavity, which resulted from increased intra-abdominal pressure and fluid migration through the inguinal canal. This is the alternative pathogenesis that could be explained by abdominal-inguino-scrotal hydrocele.

The diagnosis of ASH is made clinically, with ultrasonography being confirmatory. Typically, ultrasound demonstrates an encapsulated anechoic fluid collection extending from the abdomen to the scrotal cavity through an inguinal ring. It can be concomitantly used to evaluate the upper urinary tract for complications that are usually secondary to pressure effects on the adjacent structures, such as the ureter and iliac vein, resulting in hydronephrosis and unilateral leg edema. A CT scan or MRI can also be used to delineate the full extent of the ASH. Intra-abdominal injection of a radiotracer, like Tc-99m macroaggregated albumin, for visualization of peritoneo-scrotal communication has been used for many years [10, 11].

Surgical correction is the treatment of choice in adult patients because of the unlikelihood of spontaneous resolution and to avoid pressure-related complications, with a number of approaches like scrotal, inguinal, inguinoscrotal, and laparoscopic-assisted scrotal approaches being recommended [12].

Conclusion

Although it is a rare clinical finding, ASH due to communicating shunt between the peritoneal cavity and scrotum should be considered in patients with underlying conditions causing ascites presenting with hydrocele like scrotal enlargement.

Declarations

Ethics Approval and Informed Consent Statement

The ethical approval for the present study was obtained from the institutional review board of Adera Medical and Surgical Center. All the information obtained was held confidential and used only for the intended purpose.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Availability of Data and Materials

The datasets used during the study are available from the corresponding author up on reasonable request.

Competing Interests

The authors report no conflicts of interest related to this work.

Funding

No funding was obtained.

Author contributions

Abate Bane Shewaye - conceptualization, manuscript development, review and editing.

Kaleb Assefa Berhane - manuscript development, review and editing.

Samrawit Solomon - manuscript development, review and editing.

Fekadu Ayalew- manuscript review and editing

All authors reviewed and approved the final version of the manuscript.

Acknowledgments

We are grateful to the patient and colleagues who were involved in the care of the with patient.

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