CASE REPORT PEER REVIEWED | OPEN ACCESS

Acute idiopathic scrotal edema (AISE): A case report in Al-Ahsa, Saudi Arabia

Hassan Ali Aldehneen, Murad Al Nasser, Nasser Allubly, Maram Abdullah Alharbi, Mohammed Adel AlBesher, Ali Abduljalil Alsamin

ABSTRACT

Introduction: Acute idiopathic scrotal edema (AISE) is a rare, self-limiting condition of uncertain etiology, predominantly affecting children. It is characterized by sudden scrotal swelling and erythema without involvement of the testes or paratesticular structures. While benign, it can mimic more severe conditions like testicular torsion, requiring careful differentiation to avoid unnecessary surgical interventions.

Case Report: We report the case of an 8-year-old boy in Saudi Arabia who presented with acute onset bilateral scrotal swelling, mild erythema, and tenderness, predominantly on the right side. There were no associated fever, trauma, or urinary symptoms. A similar episode two weeks earlier was resolved without medical intervention. Examination revealed generalized scrotal swelling with skin thickening, palpable testicles with normal position and size, and intact cremasteric reflexes. Laboratory results were unremarkable except for mild leukocytosis. Doppler ultrasound showed preserved vascularity of both testicles with characteristic edematous scrotal wall thickening and the "fountain sign," confirming the diagnosis of AISE. Management and outcome: The patient was managed conservatively with non-steroidal anti-inflammatory drugs (NSAIDs) and intravenous (IV) ceftazidime. The symptoms resolved completely within 48 hours, and he was discharged in good condition with a short course of oral antibiotics. A two-week follow-up showed no recurrence or residual symptoms.

Conclusion: This case underscores the importance of recognizing AISE in pediatric acute scrotum presentations to avoid unnecessary surgery. Clinical evaluation and Doppler ultrasound, highlighting the "fountain sign," are pivotal for diagnosis. Conservative treatment ensures a rapid and favorable outcome, as demonstrated in this case.

Keywords: Acute idiopathic scrotal edema, Doppler ultrasound, Fountain sign, Non-steroidal anti-inflammatories

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INTRODUCTION

Acute idiopathic scrotal edema (AISE) is a disorder that settles on its own and has an unspecified origin, primarily affecting children. It presents with rapid development of swelling and redness in the skin of the scrotum and dartos layer. While this disease does not concern the testis or adjacent tissues, it can be hard to

tell apart from different sources of acute scrotal pain during the primary assessment. Correct diagnosis is vital to bypass unwarranted surgical approaches [1].

CASE REPORT

The patient was an 8-year-old boy, the product of normal vaginal delivery, full-term, uncomplicated, eventless pregnancy. The patient was not known to have any health issues or allergies and was presented to our hospital's Emergency Department complaining of acute onset of bilateral scrotal swelling. The swelling was noted in the afternoon of the same day of presenting to the Emergency Department and progressed rapidly causing the patient significant distress and gradual pain lasting 6 hours to the point he complained to his mother by whom he was brought to the Emergency Department. He denied prior trauma to the testes and there was no fever or lower urinary tract symptoms nor any history of previous surgeries in the scrotum.

The patient had similar scrotal swelling and pain two weeks before this visit, which was relieved by analgesics, swelling subsided gradually with no medical attention.

Upon examination, the patient was afebrile. Vital signs were as follows: temperature 36.8°C, pulse 95 beats per minute, respiratory rate 20 breaths per minute, and oxygen saturation 99% on room air.

The patient was lying comfortably in bed not in distress or pain.

Abdominal examination: The abdomen was soft and lax with no tenderness, no guarding, no rigidity, and no palpable masses.

Genitalia examination: Circumcised penis, normal in shape and size with mild edema, normal meatus with no discharge noted. Scrotal generalized swelling was noted with skin thickness, mild erythema, and mild to moderate tenderness predominantly on the right side, both testicles palpable in the scrotum, with no high riding, normal position, and normal size.

Positive cremasteric reflex bilaterally (Figure 1). Laboratory tests were unremarkable other than slightly elevated white blood cell count. Complete blood count results were as follows: white blood cell count 11.46×10^9/L, hemoglobin level 12.20 g/dL, platelet count 284×10^9/L, creatnine 37 µmol/L, serum sodium level 141 mmol/L, and serum potassium level 4.26 mmol/L.

Urine analysis: This analysis showed the following: Urine white blood cells 1–2, red blood cells 0–2, and nitrate negative.

Urine culture: No growth.

Erythrocyte sedimentation rate was normal. Doppler ultrasound scrotum was done in the Emergency Department and showed intact vascularity bilaterally and homogenous echogenicity and there was no identified collection.

This patient was admitted for further evaluation and management of the acute scrotum.

US Doppler for the scrotum was repeated the next day and showed edematous scrotal skin thickening with increased blood flow representing a classical picture of a fountain sign (Figure 2).

The patient received expectant management and treatment with non-steroidal anti-inflammatories and antibiotics ceftazidime. After 48 hours, the patient's symptoms resolved completely, and he was discharged from the hospital in good condition with oral antibiotics (amoxicillin for a total of five days) (Figure 3).

The patient came to the outpatient clinic two weeks later for follow-up and he was doing well with no recurrent attack of acute scrotal edema.

Figure 1: Scrotal swelling.

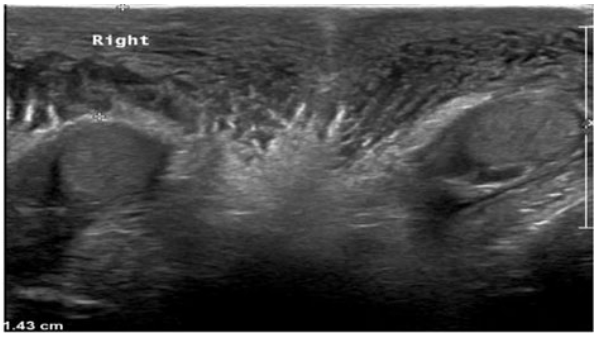

Figure 2: Fountain sign.

Figure 3: Resolved swelling

DISCUSSION

Unlike other acute scrotal cases, acute idiopathic scrotal edema does not affect the testis or surrounding structures this distinction helps to differentiate it from more serious conditions such as testicular torsion or epididymitis thereby preventing unnecessary surgical procedures [2]. Acute idiopathic scrotal edema is most frequently observed in young boys aged 2–10 years. Although it is relatively uncommon, it is a significant cause of acute scrotal swelling in pediatric patients the incidence tends to peak during early childhood and is believed to decrease as the child grows older although rare cases have been documented in adults [3].

Acute idiopathic scrotal edema often manifests as a sudden expansion of non-tender bulge and redness in the scrotal area, which may extend to the perineum or groin region. This appearance may sometimes be confused with more severe issues that require prompt therapy, like testicular torsion. In contrast to other disorders, AISE is not seen with fever or systemic manifestation, which aids in its differentiation during clinical assessment. Furthermore, allergic predisposal conditions, such as hay fever or playing in grass, should be highly considered [4].

Acute idiopathic scrotal edema is mainly diagnosed through clinical assessment, but imaging is often utilized to rule out other reasons for a swollen scrotum, especially when the presentation is unclear. Doppler ultrasonography is commonly used to analyze blood flow to the testis, which usually appears normal in AISE cases. This imaging is essential for excluding conditions, such as testicular torsion or epididymitis, which would demand other treatment choices [5].

The fountain sign is an essential sonographic feature of AISE. It appears as a fountain-like pattern of vascularity on the transverse-colored Doppler sonograph of both testicles. Regarding AISE, there is a significant bilateral and symmetrical increase in vascularity of the scrotal wall and hypoechoic thickening. This manifestation results from hyperemia in the peri-testicular tissues, leading to edema and thickness [6].

The precise cause of AISE is still not well understood, but it is believed to be associated with localized vascular or lymphatic dysfunction. Some research indicates that it could be a type of localized angioedema or hypersensitivity reaction, noted for its quick onset and tendency to resolve on its own. However, specific allergens or triggers are infrequently identified, and the condition often resolves without the need for treatment [7].

The approach to managing AISE usually involves conservative measures since it tends to resolve on its own. For symptom relief, supportive treatments, for example, non-steroidal anti-inflammatory medications and cold compresses can be helpful. Antibiotics or surgery are not required, as the swelling commonly diminishes naturally in 24–48 hours without any complications [8]. The prognosis for AISE is very positive, as most cases resolve fully and do not usually reoccur. Long-term complications are uncommon, and once it has been resolved, ongoing follow-up is generally not necessary [9].

In this case, the patient received an NSAID to alleviate the swelling, along with IV ceftazidime, and was discharged the next day. His symptoms completely resolved within 48 hours.

CONCLUSION

This case highlights the presentation, diagnosis, and successful management of acute idiopathic scrotal edema (AISE) in an 8-year-old boy in Saudi Arabia. Acute idiopathic scrotal edema, a rare and self-limiting condition, is significant in pediatric acute scrotal cases due to its potential to mimic more serious conditions like testicular torsion, emphasizing the need for accurate diagnosis to avoid unnecessary surgical interventions. In this case, clinical examination and Doppler ultrasound, displaying the characteristic “fountain sign,” were instrumental in establishing a non-invasive diagnosis. Conservative management with NSAIDs and antibiotics led to a full recovery within 48 hours, underscoring AISE’s typically benign course and favorable prognosis when promptly identified. This case adds to the literature by documenting AISE’s clinical features and reinforces the importance of awareness in emergency settings to optimize patient outcomes.

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Author Contributions

Hassan Ali Aldehneen – Conception of the work, Design of the work, Acquisition of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Murad Al Nasser – Conception of the work, Design of the work, Acquisition of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Nasser Allubly – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Maram Abdullah Alharbi – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Mohammed Adel AlBesher – Conception of the work, Design of the work, Acquisition of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Ali Abduljalil Alsamin – Conception of the work, Design of the work, Analysis and interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

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Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.