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Case – Neonatal -Bilateral Scrotal Pyocele: An Unusual Manifestation of Salmonellosis

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Abstract

Pyocele, or neonatal bilateral scrotal abscess, is an uncommon condition in the neonatal period that is brought on by bacterial organisms following bacteremia or retrograde reflux as a result of genitourinary disorders. Usually, the feco-oral pathway is used to disseminate salmonellosis, whether it is typhoidal or not. Although acute gastroenteritis is the most common symptom of Salmonella, extra-intestinal symptoms such as reactive arthritis and osteomyelitis have been reported. This case report details a unique instance of bilateral scrotal abscess caused by neonatal salmonella, the first of its kind to be documented in Ethiopia. No anomalies of the urinary system were found. Cerebrospinal fluid, blood, and urine cultures came out negative.

Keywords: *urinary tract infection, ultrasonography, salmonella, Ethiopia*

Introduction

Acute scrotum is rare in newborns; however, it is an urgent case in neonatology. Three main causes of acute scrotum in neonates are neonatal testicular torsion and its appendix, the inguinal herniation, and epididymo-orchitis [1]. Testicular torsion and inguinal hernia are surgical urgency, although appropriate antibiotic therapy is treatment of choice for epididymo-orchitis [2,3]. Epididymo-orchitis is a very rare disease in the neonatal period [3]. Differentiating this condition from testicular torsion and inguinal hernia is highly significant because emergency surgical intervention is the treatment of the latter two conditions; however, for epididymo- orchitis conservative therapy and appropriate antibiotic coverage is the remedy [1,2,4].

Case report

A 26-day-old neonate normally born to a 30-year-old para III mother was referred with complaints of right-sided scrotal swelling with progressive erythema and of two days duration from Dimitu Health center Wolaita zone, South Ethiopia. He was persistently febrile and but tolerating his feeds, though he was passing 4–7 loose stools daily. On physical examination, the baby had restlessness with an axillary temperature of 38.6 °C. Peripheral blood and urine were taken and he was started on intravenous ceftriaxone on admission. His white cell count was 18,600mm3 with neutrophil predominant, and urinalysis demonstrated trace red blood cells, but was negative for nitrites and leukocytes.

A Doppler scrotal ultrasound scan identified swollen ‘right testicle', the parenchymal echo of right testicle was increased and the epididymis was thick in right side. In the vicinity of right testicle area there was an internal heterogeneous hypoecho, suggesting accumulated fluid along with increased testicle and epididymal vascular blood flow keeping with right Epidydimo-orchitits (EO) with a moderate to large hydrocele (Fig. 1).

An abdominal ultrasound scan was carried out to rule out urinary tract abnormalities and it was reported as Kidneys, urinary tract and bladder were normal. The blood cultures had not showed a significant growth. He underwent a lumbar puncture showing colorless cerebrospinal fluid (CSF) with a normal white cell and protein count. A CSF culture was sent, which revealed no growth.

Despite the IV antibiotics since for 1 week, there was an increase in the right-sided hemiscrotal swelling and left side scrotum also started to swell and become erythematous (Fig. 2).

Fig 1. Scrotal swelling at presentation

Fig 2. Bilateral Scrotal swelling while on IV antibiotics

He underwent a repeat scrotal ultrasound demonstrating persistent EO and a new complex scrotal collection the right side measuring 2 x 1.1 x1cm and left side measuring 1.5 x 1 x 1 (Fig.2).

He subsequently underwent a bedside bilateral incision and drainage of his abscess, and the pus swabs sent for culture were positive for growth of Salmonella.

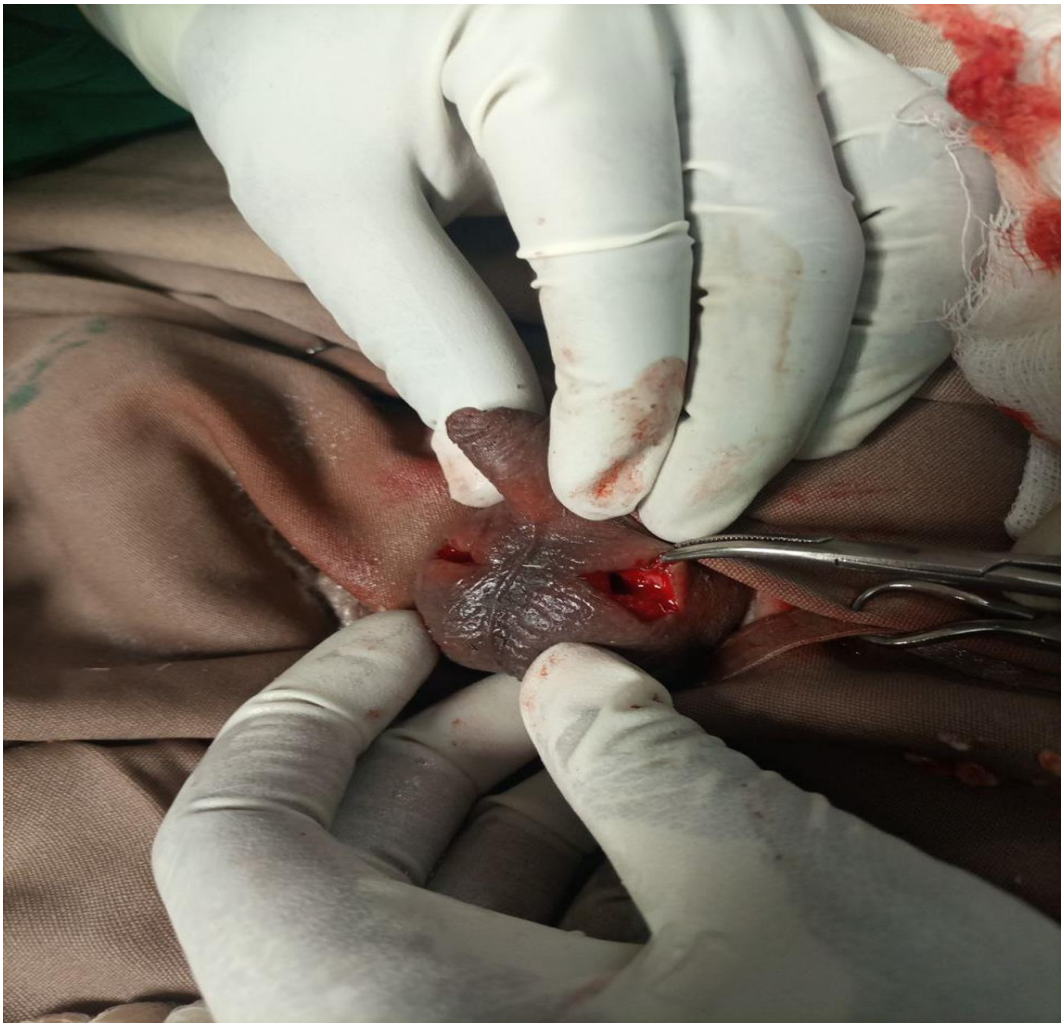

Fig 3. ambulatory pediatric surgical clinic

He continued a total three-week course of IV ceftriaxone. Approximately a month after he presented to hospital, he was seen in the ambulatory pediatric surgical clinic, where his parents reported a full recovery. On examination, both testicles were palpable within the scrotum and of normal size and consistency. The scrotal skin was not indurated and healed well postoperatively. His follow up ultrasound demonstrated resolution of the scrotal wall inflammation with no evidence of a persistent collection and bilateral normal appearances of the epididymis and testicles.

Discussion

Neonatal scrotal pyocele (abscess) is one of very rare cause of neonatal scrotal swelling, due to the purulent collection within the potential space between the visceral and parietal tunica vaginalis around the testicle, it is also described as an infected hydrocele and considered as urologic emergency, presenting as an acute scrotum.

On a clinical examination, lesions that are extratesticular or intratesticular may be the cause of a newborn's scrotal enlargement. Neonatal testicular processes include torsion, neoplasms, splenogonadal fusion, supernumerary testis (polyorchidism), and adrenal resting. Clinically, swelling can also be seen in cases of scrotal lesions outside of the testicle, such as hematomas, hydrocele, pyocele, inguinal hernias, and expansions of generalized processes. Since these entities are a heterogeneous group with a wide range of therapeutic options, prompt and precise diagnosis is crucial [5].

Only two of the seven cases of neonatal salmonella EO that we found in the literature up until 2020 were worsened by scrotal abscesses while receiving therapy for EO(3). This is the first instance of this type to be documented in Ethiopia, and it is also the first to be connected to Salmonella and become bilaterally involved, which is hardly ever linked to the formation of abscesses or detected in cultures of blood or urine [6].

Because of their heightened susceptibility to symptomatic salmonellosis, hypochlorhydria, quick stomach emptying, and diminished gut-associated

lymphoid tissue, patients less than three months of age, like our case, are thought to be at a higher risk of developing salmonella bacteremia. In infants who typically take fluids, the inoculum size required to produce disease is also comparatively smaller because of faster transit through the stomach [7-9]. Additional risk factors encompass HIV/AIDS, other immunodeficiencies, and persistent granulomatous illness, Inadequate synthesis or activity of interferon γ, therapy with corticosteroids and immunosuppressive drugs, tumors, specifically lymphoma and leukemia, Hemolytic anemia including sickle cell disease, malaria, and bartonellosis, Vascular illness caused by collagen, inflammatory bowel diseas, Using antacid medicines or experiencing achlorhydria decreased motility of the intestines, malnutrition, schistosomiasis, undernourishment. Currently, the favored mode of infection is hematogenous seeding by a salmonella bacteremia, as opposed to ascending infection via the urinary system [8]. Given that urine and CSF cultures have historically come out negative in cases comparable to ours, it appears most likely that the sequence of salmonella scrotal pyocele is the result of a widespread infection [8]. Although the precise cause of the scrotal spread is unknown, some research indicates a correlation between strains of salmonella that cause extra-intestinal illness and those that have the spv genetic locus, which increases the virulence of the bacteria [10].

Clinical experts agree that lumbar punctures should be done for CSF culture in cases of widespread salmonella infection symptoms, such as high fever, high-pitched crying, and irritability, in order to rule out meningitis [9]. Three case reports had lumbar punctures, similar to ours, but unlike us, their blood cultures came back positive. Although a blood culture may not always yield positive results, as was the case in our case and five of the seven cases that were reported, clinicians should always treat patients with confirmed salmonella pyocele as having experienced bacteremia and consult infectious diseases regarding additional testing [9].

All of the documented instances of salmonella EO and scrotal pyocele eventually required incision and drainage, in accordance with our case management protocol. An abscess was discovered during surgery in a case that was first believed to be a strangulated inguinal hernia [8] or an abscess identified preoperatively, an incision and drainage was required despite a trial of intravenous antibiotics. Patients appear to heal well after that. As a result, specialists advise urology surgeons to become involved as soon as possible in any instance of salmonella EO or pyocele [9].

Salmonellosis constitutes a major public health burden and represents a significant cost to society in many countries, with an incidence proportional to the standards of hygiene, sanitation, availability of safe water, and food preparation practices. Animal interaction, particularly with reptiles, and contaminated foods, such as poultry, eggs, dairy, ground beef, and produce, are common sources of non-typhoidal sickness. Parents should be questioned about any domestic animals they may have at home, any sick close connections, and any exposure to animal treats which frequently contain raw meat, in order to assist to identify the source of the infection [9].

Ceftriaxone is recommended by the Canadian Pediatric Society as the first empirical antibiotic treatment, and this recommendation aligns with the patient's condition. When considering EO alone, it is possible to reduce the dosage to oral therapy based solely on antimicrobial sensitivity. However, in our case, we continued the intravenous meningeal dose of ceftriaxone for 21 days because there were clinically suggestive signs and symptoms of meningitis despite the CSF culture being negative. This is because CSF culture results can be influenced by a variety of factors, including the quantity and caliber of laboratory settings.

An uncommon but significant sign of widespread salmonella infection is scrotal pyocele. Urological surgeons, infectious disease specialists, and public health professionals should collaborate closely to ensure a multidisciplinary approach to the study of widespread infections and the selection and administration of antibiotics. This will help to pinpoint the cause and stop future transmission [8].

Learning points

- **Host Factors and Conditions Predisposing to Development of Pediatric Systemic Disease with *Salmonella* Strains:**
  - Neonates and young infants (≤3 mo old)
  - HIV/AIDS
  - Other immunodeficiencies and chronic granulomatous disease
  - Defects in interferon γ production or action
  - Immunosuppressive and corticosteroid therapies
  - Malignancies, especially leukemia and lymphoma
  - Hemolytic anemia, including sickle cell disease, malaria, and bartonellosis
  - Collagen vascular disease

- Inflammatory bowel disease
- Achlorhydria or use of antacid medications
- Impaired intestinal motility
- Schistosomiasis, malaria
- Malnutrition

✦ In the presence of disseminated disease or positive blood cultures for salmonella, the Canadian Pediatric Society recommends empiric IV ceftriaxone.

✦ In the case of neonatal scrotal pyocele, however, routine surgical exploration may be prudent not only for diagnosis, but also to assist a microbiological diagnosis, guide antibiotic therapy, to evacuate a pyocele and hasten resolution of systemic sepsis. ***(Scott Morris, et al, 2016)***

Conclusion

Hematogenous seeding after septicemia may result in neonatal scrotal Salmonella pyocele. This case study and other literature studies point to a tendency for early subclinical pyocele formation during septicemia or show that the testis is a relative sanctuary spot for bacteria. Pyocele is characterized by typical clinical and ultrasonography findings; however, surgical exploration is recommended for both diagnosis and treatment. While the literature suggests that underlying uropathy is more common in younger children with EO or/and scrotal abscess, abdomino-pelvic ultrasonography in this case suggests that uropathy is improbable and further urological examinations are not necessary.

Abbreviations (acronyms and abbreviations)

HIV/AIDS, Huma immune Virus/ Acquired Immune Deficiency Syndrome; EO, Epidydimo-orchitits; CSF, Cerebro-Spinal Fluid; WHO, World health organization; WSUCSH,Wolaita Sodo University Comprehensive Specialized Hospital

Declarations

Consent

Written informed consent was obtained from the patient's parents for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

The availability of data and materials

The datasets used and/or analyzed during this study available from the corresponding author on reasonable request.

Competing interests

The authors declare that no competing interest exist

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Authors' contributions

AB was involved in the evaluating, investigating and treating the patient, report and manuscript writing;

UD involved in collecting investigations, report and manuscript writing;

AA participated in the conception to report as a case, treating the patient.

DD involved in conception to report as a case, treating the patient.

TN participated in the surgical procedure and treating the patient and follow-up.

SM participated in the surgical procedure and treating the patient and follow-up.

BA involved in treating the patient and follow-up.

KG participated in investigating and treating the patient,

SM treating the patient and follow-up.

All authors read and approved the manuscript

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References

1. Kliegman RA SB, Geme ST, Schor NF, Behrman RE. Philadelphia: Elsevier/Saunders. Nelson textbook of pediatrics. ed t, editor2019.
2. Charles M LJ, Gatti M. In: Holcomb III GW, Murphy JP, eds. Aschraft's pediatric surgery. Philadelphia: Sunders/Elsevier; 2010. ed. t, editor2010.
3. Trecarten, S., Zu'bi, F., Beaiti, M., & Papanikolaou, F. (2019). Case–Neonatal epididymo-orchitis: An unusual manifestation of salmonellosis. Canadian Urological Association Journal, 13(9), E303.
4. Kabiri, M., Barkat, A., El Ajaje, H., Allali, N., Dafiri, R., & Lamdouar-Bouazzaoui, N. (2010). Neonatal epididymo-orchitis caused by Pseudomonas aeruginosa: a case report. Cases journal, 3(1), 1-3.
5. al. Be. Scrotal Swelling in the Neonate. PMC 2016 June 20.

6. al. Ne. Salmonella edition s, editor 2020.
7. Ngoo, A., Rodriguez-Acevedo, O., Carroll, D., Stalewski, H., & Mariyappa Rathnamma, B. (2019). Salmonella epididymo-orchitis presenting as acute scrotum in a 2-week-old infant. Journal of Paediatrics and Child Health, 55(4), 468-471.
8. Trecarten, S., Zu'bi, F., Beaiti, M., & Papanikolaou, F. (2019). Case–Neonatal epididymo-orchitis: An unusual manifestation of salmonellosis. Canadian Urological Association Journal, 13(9), E303.
9. Robinson, J. L. (2019). Salmonella infections in Canadian children. Paediatrics & Child Health, 24(1), 50-50.
10. Guiney, D. G., & Fierer, J. (2011). The role of the spv genes in Salmonella pathogenesis. Frontiers in microbiology, 2, 129.