Group B Streptococcal Septicaemia Causing Bilateral Acute Parotitis in an Infant: A Rare Case Report

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Abstract

Acute parotitis is a rare condition in young infants and is characterized by swelling of the parotid gland associated with fever and pain. *Staphylococcus aureus* is the most common causative agent of this disease. Prevalence is higher in males. We describe the case of a 55-day-old Asian female infant who presented in the emergency department with complaints of fever, reluctance to feed, and irritability with unremarkable examination. During hospitalization pre-auricular edema was observed bilaterally close to the angle of the jaw along with signs of inflammation, greater on the right side. Ultrasound findings showed parotid gland enlargement and blood culture report was positive for *Streptococcus pyogenes*. Antibiotic treatment with injectable Vancomycin was given for 7 days and the patient had rapid recovery in terms of both symptom improvement and reduction of glandular swelling. This case illustrates the need for consideration of this disease in infants and its likelihood in both genders and emphasizes the early institution of appropriate therapy of acute parotitis for faster recovery and prevention of complications. There is much data on acute parotitis in adolescents but due to the paucity of data in young infants, there is a need to investigate further the causes and treatment of this disease in infants.

Keywords: *Infants, acute parotitis, pre-auricular edema, group b Streptococcus.*

INTRODUCTION

Acute parotitis is a scarcely reported infection in neonates and infants. It is usually unilateral, and the global prevalence is 3.8/10,000 live births in newborns hospitalized in NICU and 1/100,000 in full-term neonates [1-3]. Risk factors include prematurity, dehydration, congenital anomalies of the parotid gland, oral trauma, and immunodeficiency. Staphylococcus aureus is the most prevalent organism while other gram-positive and gram-negative organisms are also documented. Acute parotitis is managed with appropriate antibiotics and surgery is needed only in complicated cases.

This report will discuss the first reported case of acute bilateral parotitis caused by *Streptococcus pyogenes* due to hematogenous dissemination in a female infant. It is evident that early diagnosis and timely management with proper medication can result in faster recovery; within 48 hours as in our reported patient.

CASE REPORT

A 55-day-old female infant, weighing 3600 g, was admitted to the neonatal intensive care unit of the National Institute of Child Health, Karachi with a complaint of high-grade fever (39.5 °C) for 2 days associated with an inconsolable cry, irritability, and reluctance to feed. There was no other significant history regarding facial or oral trauma of the patient, maternal skin infection or mastitis. Family history did not indicate any risk of congenital anomalies. She is the first child from a consanguineous marriage. The baby was born preterm at 35 weeks of gestation spontaneously due to premature rupture of the membrane. The birth weight was 2200 g, head circumference 33 cm, length of 46 cm, and normal Apgar score. Birth immunization was done. On general physical examination oral cavity findings were normal with no organomegaly and lymphadenopathy.

After taking samples for further workup, appropriate antibiotic therapy (ampicillin and gentamicin) at the correct doses was started. On second day of hospitalization,

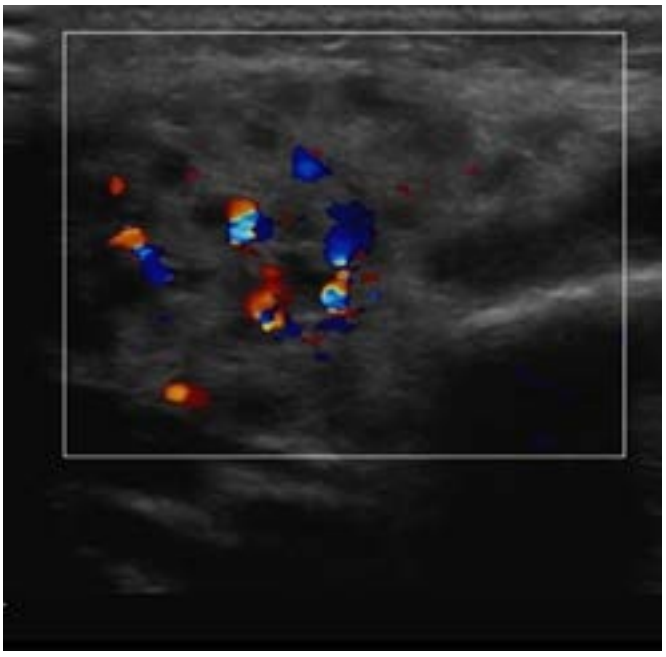

Fig. (1): Ultrasound doppler parotid gland showing increase vascularity.

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Received: September 3, 2023; Revised: January 25, 2024; Accepted: March 27, 2024
DOI: https://doi.org/10.37184/lnjpc.2707-3521.6.43

  ISSN: 2708-9134 (Online) Liaquat National Journal of Primary Care 2024; 6(3): 282-284

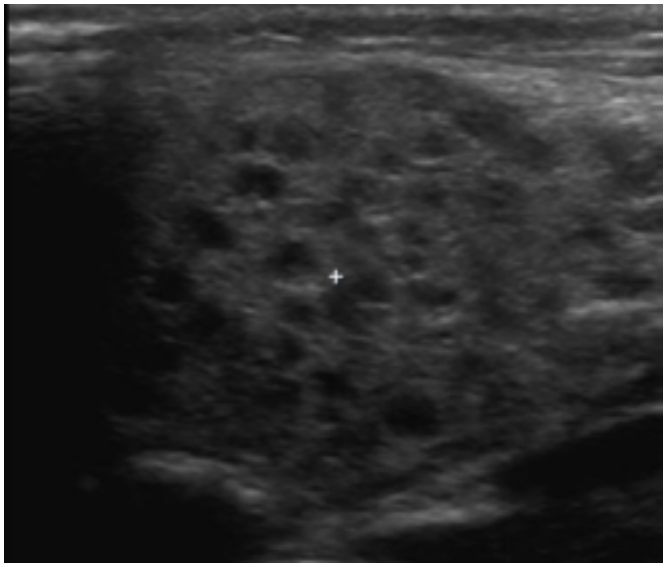

Fig. (2): Ultrasound parotid gland gray scale image showing bulky heterogenous parotid gland.

pre-auricular edema was observed bilaterally close to the angle of jaw along with signs of inflammation, larger on the right side. The edema measured 4 cm in diameter on the right side and 2 cm on left side. The parotid duct did not show signs of obstruction or effusion.

Ultrasound examination revealed a heterogeneous right parotid gland with increased vascularity and reactive lymphadenitis. The right parotid measures 3.3 x 2.3 cm with right intraparotid nodes 0.5 x 0.5 cm, whereas the left parotid gland measures 3 x 2 cm with left intraparotid node 0.5 x 0.5 cm. Few enlarged lymph nodes were noted on both sides of the neck and sub-mental region measuring 1.1 x 1.1 cm (**Fig. 1** and **2**).

Laboratory results showed neutrophilia with left shift and thrombocytosis: white cell count 21.5x 10 E9/L (59.7% neutrophils and lymphocytes 34.3%), platelet count 667000, hemoglobin 8.5 g/dL; C reactive protein 60 mg/L (normal <1 mg/L). The blood culture was positive with *Streptococcus pyogenes*. Serum IgA Level was done to rule out innate immunodeficiency which turned out to be normal, 0.48 g/L.

Based on these labs, medications were switched to Injection Vancomycin (40mg /kg/day) and Injection Cefotaxime (100mg/kg/day) for 7 days. IV paracetamol was given for analgesic and antipyretic management. Fever and signs of parotid inflammation subsided on day 5 of the changed antibiotic. The patient was discharged after completing 7 days of antibiotic course. On follow-up visit after 3 days there was no active complaint and the repeat ultrasound was normal.

DISCUSSION

Acute parotitis is a novel disease for young infants and requires unique management. Cases have been reported within the literature since 1970. Mori *et al.* reviewed 72 cases in 2021, including 32 cases by Spiegel *et al.,* 12 by Ismail *et al.,* 2 new cases, and 26 other cases [4].

Acute parotitis is characterized by swelling of the parotid gland associated with fever, pain and drainage of pus into oral cavity. It is caused by retrograde seeding of infection from the oral cavity to parotid gland *via* Stensen duct. It is found that among salivary glands, parotid get infected often due to the non-bacteriostatic properties of its serous fluid.

Risk factors leading to acute parotitis include septicaemia, dehydration, ductal obstruction, structural abnormality of the parotid gland, prematurity, male gender, prolonged nasogastric intubation, cephalic or facial trauma and immunodeficiency/immunosuppression [5, 6]. In one report 38% of patients with parotitis were born prematurely and male: female ratio was 3:1 [1, 6, 7]. Most cases are unilateral (83%) whereas this patient is female gender and had bilateral involvement [2, 4, 7]. Transient IgA deficiency is found in neonates which can lead to head and neck infections including parotitis by affecting mucociliary clearance [8]. It is reported higher in breastfed infants (88%) [4]. In our case, prematurity and dehydration were excluded; because nasogastric intubation was not given and had adequate weight gain for age and there was no reported skin or mucous membrane injury from the neonatal period to date [5].

The most prevalent organism is staphylococcus aureus accounting for (55%), seconded by gram-positive and gram-negative organisms respectively (22%) (22.4%), followed by anaerobes accounting for (8.6%) [9]. In the case described here, blood culture was positive for *streptococcus pyogenes* and there was the absence of effusion through the parotid duct which supports that hematogenous dissemination is the primary pathogenic mechanism. Only one study published by Hererra G shows the same blood culture growth of *Streptococcus pyogenes* [10].

Laboratory markers are not specific in parotitis but an elevated ESR, amylase, or TLC with neutrophilic leukocytosis may help identify the disease process [1]. Ultrasound is a non-invasive and cost-effective technique that can visualize inflammation and edema of the parotid gland, along with signs of abscess formation, necrosis, and fibrosis [1].

The case we present is unique because although *Streptococcus pyogenes* is the prevalent causative agent of parotitis in children and adults, it is a rarely found pathogen in infants. *Streptococcus pyogenes* seeds into the parotid gland from the bloodstream.

Medical therapy is enough for 78% of patients, there is usually no need for surgical drainage [10]. Treatment consists of intravenous antibiotic therapy for 7-21 days, fluid replacement and pain management. Within 1 to 2 days, clinical improvement was observed with a decrease in swelling of the parotid gland. Surgical drainage may

be required in case there is no clinical improvement. In our patient, parotitis completely resolved within 7 days of treatment without development of complications.

The prognosis for acute parotitis is encouraging although complications such as parotid abscess, facial palsy, salivary gland fistulae, mediastinitis and infection of ipsilateral ear may occur [5]. None of these were present in our baby. Complete septic workup is important to be performed, including blood and CSF cultures in a newborn because bacteremia was found in 90% of cases and there can be meningitis associated with 33% of cases [8].

CONCLUSION

For a patient presenting with swelling and tenderness in the parotid gland with no relevant history of contact with mumps patient during the neonatal and infancy periods, the first thing that should be considered is acute parotitis. It is easy to diagnose and treat with antibiotics but other etiologies must be ruled out. Good oral hygiene and proper fluid hydration are mandatory. Ultrasound examination is cheaper and more convenient for bedside diagnosis. The culture of drainage material and blood is crucial for bacterial identification and adequate treatment. In complicated cases, CT and MRI may be needed for diagnosis.

CONSENT FOR PUBLICATION

Informed consents were obtained from the patient's parents to publish the data.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENTS

Declared none.

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