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Case Report

Microbiology Section

Septic Arthritis caused by Group A *Streptococcus* in Newborn: An Unusual Presentation

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ABSTRACT

Streptococcal sepsis in neonates is a potentially lethal condition. A wide spectrum of clinical presentations has been often reported in Group B *Streptococcal* infections in neonates. Bone and joint infections which are caused by Group B Streptococcus are also encountered frequently, but they have not yet been reported in case of Group A *Streptococcal* infection in neonates. Here, we are reporting a case of septic arthritis and late onset neonatal sepsis which were caused by Group A *Streptococcus* in a full term, healthy baby.

Key Words: Neonatal sepsis, Septic arthritis, Group A *Streptococcus*

INTRODUCTION

Neonatal sepsis is a clinical syndrome of blood stream infections, with systemic signs of sepsis occurring in the first month of life. As compared to the pre-antibiotic era, the frequency of the neonatal sepsis which is caused by Group A *Streptococcus* (GAS) has decreased drastically and its complications are also showing a decreasing trend. The mortality which is caused by the GAS infection in neonates is uncommon nowadays. However, Group B *Streptococcus* (GBS) has emerged as a prominent aetiology in neonatal infections [1]. Although bone and joint infections in newborns are not an infrequent observation in the GBS infection, they are a rarity in case of GAS. Septic arthritis which is caused by GAS, is mainly reported in adults rather than in neonates. As per a recent prospective surveillance study, the estimate of Group A *streptococcal* septic arthritis was 7.4% in the Indian population [2]. Negative blood cultures in neonatal septic arthritis are reported in 40% of the cases, followed by 33% and 20% cases, which are attributed to gram negative bacteria viz., *Klebsiella pneumoniae, Escherichia coli and Enterobacter* and gram positive pathogens viz., *Staphylococcus aureus,* GBS and *Streptococcus pneumonia* in India respectively [3]. Here, we are reporting the clinical history of an unusual case of septic arthritis and late onset neonatal sepsis which was caused by GAS.

CASE REPORT

A 26 years old, second gravida lady delivered a 3.2 kg term healthy male baby by caesarean section. The baby had a breech presentation and meconium stained liquor and shortly after delivery, he developed jaundice, which responded well to phototherapy. On the 8th day of his life, his mother complained of a swelling on his right elbow and reduced movements of the right forearm. On examination, the diffuse swelling over the right elbow was found to be tender, along with signs of inflammation. Although there was no history which was suggestive of a pulled elbow injury, it was initially diagnosed as a dislocation of the elbow. It was not associated with the typical signs of sepsis like thermal instability, haemodynamic instability, bradycardia, and respiratory discomfort [4] and the haematological parameters were also within normal limits. However, the CRP value was high (3.6 mg/dl). Ultrasonography revealed fluid accumulation in the affected elbow joint, which on aspiration was found to be serosanguinous and on direct microscopic examination, displayed few gram positive cocci in pairs and chains, amongst plenty of neutrophils. Both the blood culture and the pus aspirate from the elbow joint displayed the same strain of beta haemolytic streptococci which showed the same antibiotic sensitivity pattern. The isolate was identified as *Streptococcus pyogenes* by conventional method and it was further confirmed by serogrouping with the use of the Streptex *Streptococcal* grouping kit (Oxoid, United Kingdom, Lot Number 1083582, manufacturing date Feb, 2012). The signs of inflammation subsided after 2 days of parenteral ampicillin, cloxacillin and amikacin therapy. However, the swelling persisted. Incision and drainage of the pus and a second blood culture which was done on the 10th postnatal day, were found to be sterile. The postoperative period was uneventful and the wound was healthy. Oral ampicillin and erythromycin was started and baby was discharged on the 19th postnatal day.

DISCUSSION

Neonatal sepsis is a dreadful complication which contributes up to 12% of the total neonatal deaths in the Indian population [5]. *Streptococcus pyogenes* is a major cause of both puerperal as well as neonatal sepsis, especially in the developing countries. As per the WHO report, it was the cause of the bacteraemia in neonates in 0.55 per 1,000 live births [1]. GAS has also been reported to constitute about 21% of the cases of late onset neonatal sepsis in the Indian subcontinent [6]. However, over the past few decades, it has been replaced by GBS, which has emerged as a more successful pathogen, as a result of the asymptomatic colonization of the birth canal in pregnant women, which can be seen in as high as 35% women [7]. The *Streptococcal sepsis* in neonates occurs in two setups. The early onset sepsis manifests within the first week of life and the infection is acquired during the antenatal period through an ascending infection or intranatally from an exposure to the vaginal flora, while in late onset sepsis, the infection is mainly transmitted from an external source, especially from caregivers [8]. In this case also, it was likely that the baby had acquired the GAS infection postnatally, as the high vaginal

swab for the antenatal GBS screening of the mother was negative. The neonatal colonization by GAS was reported to be 19% in one study [9]. Although, *S. pyogenes* has been reported to cause neonatal sepsis, meningitis, skin infections, the toxic shock syndrome and unusual presentations like parotitis, it has not yet been reported to cause septic arthritis in neonate [9-13]. It is predominantly the result of a haematogenous spread and seeding in the synovial membrane. Monoarthritis is typical. However, multifocal GAS polyarthritis has also been reported [14]. The importance of serogrouping and sensitivity testing is of particular interest in cases of pregnant women with penicillin allergy, since erythromycin and clindamycin resistances are frequently prevalent among the GBS strains [8]. In this case, the diagnosis was challenging, since the classical signs of sepsis were absent and consequently, it was initially considered as a case of elbow joint dislocation. In such cases, the laboratory parameters have vital roles in the diagnosis. A high CRP level was the initial parameter which suggested a probable infective aetiology. *Streptococcal sepsis* frequently causes severe sepsis in newborns, with high mortality, particularly in premature neonates [7]. As there was no prematurity in this case, a prompt diagnosis and an appropriate treatment resulted in an uneventful resolution of the sepsis and the arthritis.

CONCLUSION

The GAS sepsis in neonates is potentially lethal and it also carries the risk of an outbreak in nurseries due to hospital cross infections. However, it is amenable to treatment if it is diagnosed early. The clinical presentation may be unique and it may be confused with GBS. Sero-grouping and susceptibility testing should be done for all the isolates, for a proper selection of antibiotics, especially in penicillin allergic patients.

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