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Original Research Article

Clinical profile of babies admitted with septic arthritis in Neonates

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ABSTRACT

Background: Septic arthritis (SA) in the neonatal period is rare but important clinical condition that needs timely recognition, and treatment to save the joint and life of the baby. The objective of this study was to look at the clinical profile of babies presenting with septic arthritis in neonatal period.
Materials and Methods: This was a prospective observational study from 2019 to 2020 undertaken in SNCU.
Results: There were 13 babies who met the criteria of SA and data was collected after obtaining consent. All of them were born at term, mostly males (n=12). The mean age at presentation was day 17 (10-28days), after a mean duration of 3 days from the onset of symptoms. It was monoarticular in 11 babies. The most common joint that got involved was knee. Methicillin Resistant Staphylococcal aureus (MRSA) was the most common isolate from blood and joints. All the babies received a minimum of 3 weeks parenteral antibiotics.
Conclusion: The diagnosis of SA is mostly done clinically. With the advent of MRSA, it is important to include Vancomycin/Linezolid for the recommended duration.

1. Introduction

Septic arthritis is a suppurative infection of the joint. It is a deep seated infection and presents with or without other systemic features. It has been seen in 0.3 to 0.6 in 1000 live births.[1] This when left untreated or recognized late in the course of disease can prove disastrous. The occurrence is contributed by the immature immune system, rich vascular supply, and poorly developed synovial basement membrane.[2]

2. Materials and Methods

This prospective observational study was conducted after institutional ethical clearance in Special Newborn Care Unit (SNCU), Department of Pediatrics of MKCG Medical College and Hospital. We have enrolled in our study those neonates getting admitted to SNCU between 1.3.2019 to 31.5.2020 with swelling of joints. After obtaining informed written consent from parents, the relevant history and clinical details of the baby were taken and recorded. The babies underwent standard diagnostic study of joints, and treated as per the institutional antibiotic policy after sending blood cultures. After obtaining culture reports, the antibiotics were further modified to complete the course. All the details of reports were tabulated in the Performa for analysis. The analysis was done with SPSS software.

3. Results

Thirteen babies were admitted during the study period with swelling of joint/(s). The clinical details of the babies are mentioned in Table 1. The babies were mostly born outside our Hospital (77%). Eleven (85%) were a product

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of vaginal delivery. Except one, rest of them were all males. Ultrasonography revealed collection in only 35% cases. A single joint was involved in 11 cases and 2 of them had multiple joints involvement. One case has developed osteomyelitis in admission, recognized on x-ray. Most of them (n=9) were on left side, and 3 cases were bilateral.

Table 1: Baseline characteristics of babies with septic arthritis

Characteristic	**n=13**
Day of admission (range and mean)	10-28/17
Gestational age at birth in weeks (range and mean)	37-40/39
Onset of symptoms and admission (range and mean) in days	1-5/3
Fever	10 (77%)
Joint swelling	13 (100%)
Redness overlying the swelling	11 (85%)
Tenderness	13 (100%)
Poor feeding	8 (62%)
Excessive cry	13 (100%)
Hemoglobin (range and mean) in g/dL	10.7 (9-13)
TLC (range and mean) in WBC /mm3	21,417 (18,650-31,210)
Polymorphs (range and mean) in %	94 (87-99)
Joints involved	
Knee	10 (77%)
Hip	2 (15%)
Elbow	1 (7%)
Shoulder	1 (7%)

(TLC=total leucocyte count, WBC=White blood cells)

The blood cultures obtained from these babies grew Methicillin Sensitive Staphylococcus aureus (MSSA) in 3 cases, Methicillin Resistant Staphylococcus aureus (MRSA) in 9 cases and Klebsiella was isolated from one case. The MSSA were sensitive to Cloxacillin and Amikacin. MRSA strains were sensitive to Vancomycin and Linezolid. Klebsiella was sensitive to Meropenem and resistant to cephalosporins and Piperacillin-Tazobactam. The diagnostic joint aspiration was done in 9 cases. All the samples were gross pus, and were sent for Gram stain and culture. Gram stain showed Gram Positive cocci in clusters in 6 samples. MRSA was isolated in 7 of the aspirates, and other two were sterile. The mean duration of stay was 23 days (18-36 days). All the babies received minimum 21 days of injectable antibiotics by peripheral veins in 11 cases, and the other 2 received 16 and 18 days respectively and were prematurely discharged on oral Linezolid to complete the course due to family constraints. The parenteral antibiotics that were administered to these included Cefotaxime (n=3), Amikacin (n=4), Meropenem (n=5), Vancomycin (n=6), and Linezolid (n=2). All the babies had decrease in fever by end of first week (3-10/ mean 6 days) and resolution of swelling by third week (12-18/mean17 days). There was weight gain in all babies, and none of them required intravenous fluids.

4. Discussion

Septic arthritis in neonates need high index of suspicion in children presenting with excessive cry with or without fever. In the present study, most of them were males and had involvement of single joint. Similar finding was seen in other studies in past with male preponderance.[1,3–8] All of them were born at term, and were pre-morbidly healthy. None of them had any history of intravenous injections prior to that. However, the studies in past have shown that the preterm babies with risk factors of central umbilical venous catheterization, with or without mechanical ventilation.[6,7,9] USG was showing collection in only 35% cases like in study undertaken by others.[1,4,7,10] However in a study conducted by Devi et al had very high number of findings detected on USG, which may be explained by the delay between onset of illness and date of presentation.[3] The most commonly involved joint was knee as seen in few studies in the past.[5,7] Many studies conducted in babies with premorbid features and central umbilical catheters had primary involvement of hips.[1,3,4,6,7]

All of them were managed medically by parenteral antibiotics. None in our study had surgical exploration unlike in many studies, which involved very sick babies getting infected during hospital stay and a marked delay at presentation of babies from community.[7,10] Timely intervention of antibiotics as per protocol might decrease the need of arthrotomy and other surgical explorations. In our study, the most common organism was staphylococcal aureus (MRSA > MSSA) similar to Kabak et al.[4] However, in studies with involvement of premature sick babies with central venous access have predominance to Klebsiella, and few also had fungal (candida spp).[3,7,10–12] Based on the available culture patterns, our children responded well to parenteral Vancomycin for a period of 21 days. Few studies like conducted by Akash et al have used parenteral for 2 weeks followed by oral unlike our study.[6] And few others had given injections for 4 to 5 weeks, with involvement of Klebsiella and more serious course of disease.[7,11]

5. Conclusion

This study outlines the importance of high index of suspicion, early recognition, and earliest institution of antibiotics and modifying as per the obtained cultures. We have to keep ourselves open to the changing scenario of organisms and their susceptibility pattern. The diagnosis rests primarily on clinical grounds, with timely assistance by USG and joint aspiration studies. The major limitation of the study is that we do not have the data on follow up.

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8. Conflicts of Interest

No conflicts of interest.

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