Research Article

A non-randomized retrospective study on the management of pediatric septic arthritis

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Background

Septic arthritis results from presence of microbial agents in the joint space. Though uncommon, septic arthritis must be ruled out in any child presenting with a painful joint. Septic arthritis is a true orthopedic emergency and a delay in diagnosis or treatment may lead to irreversible damage to the joint.

A clinical algorithm for the diagnosis is based on clinical predictors proposed by *Kocher et al*[2]

1) Fever >38.5^{0}C,
2) Difficulty in weight bearing,
3) White cell count of> 12 x10^{9}cells/L,
4) ESR of >40mm/hr

When all the four were present, it was suggested that the septic arthritis was very much likely to be the diagnosis. This was modified by *Caird et al*[3] to include C Reactive Protein. CRP >20mg/L as a fifth predictor had a 98% predicted probability of septic arthritis

A definitive diagnosis of septic arthritis can be made only when the pathogen has been isolated from the synovial fluid. The introduction of antibiotics substantially improved the prognosis[4].

However empirical antibiotic therapy without isolation of the bacteria might affect the treatment, thus increasing the risk of complications. The delayed complications are avascular necrosis, growth arrest with shortening and deformity, secondary arthritis and osteomyelitis[1].

Aims and objectives

The aim of our study is to show that a high index of suspicion will lead to early diagnosis of septic arthritis and to prove that correct diagnosis and prompt treatment with culture proven antibiotics after arthrotomy would result in good outcome.

Methods and Materials

This is an observational study based on retrospective and prospective data in a multispecialty tertiary care hospital. The study includes 32 consecutive children who were diagnosed with septic arthritis out of 15535 in-patients admitted to the pediatric department from June 2010–June 2014. The study takes into account the age, sex incidence, clinical features including modified Kocher's criteria[2], laboratory investigations, bacteriological analysis, imaging and intra-operative findings. All patients were managed according to standard protocol followed by Pediatrics and Orthopedics department.

Results and Discussion

Age: Our study showed a bimodal distribution of septic arthritis with 20 children below the age of 1 year and 8 children in the 5–10 year age group.

Gender: Septic arthritis was found to be more common in male children (71.8%) and most commonly affected joint being the hip.

Risk factors: For developing infection of the joint included a history of admission to the NICU and prematurity. 85.7% of infants presented with pseudoparalysis, while in older walking children pain on weight bearing was a symptom in only 18%. The second most common presentation was fever in 56%.

In our study, only 19% of the patients had 3 and none had all the four Kocher's criteria. This is in contrast to the original study by Kocher et al where 84 % had all three or all the four criteria

25% of the children were diagnosed to have associated osteomyelitis of the bone adjacent to the joint. 12.5% (4/32) of the children diagnosed with septic arthritis had a normal CRP at admission. Out of the four children with normal CRP, three had a bacteriologically confirmed diagnosis of septic arthritis.

MRI proved useful in diagnosing septic dislocation in 2 children, subperiosteal abscess in 7 and associated osteomyelitis of

the adjacent bone in 8 children. MRI was also useful in diagnosing multifocal septic arthritis and silent septic arthritis.

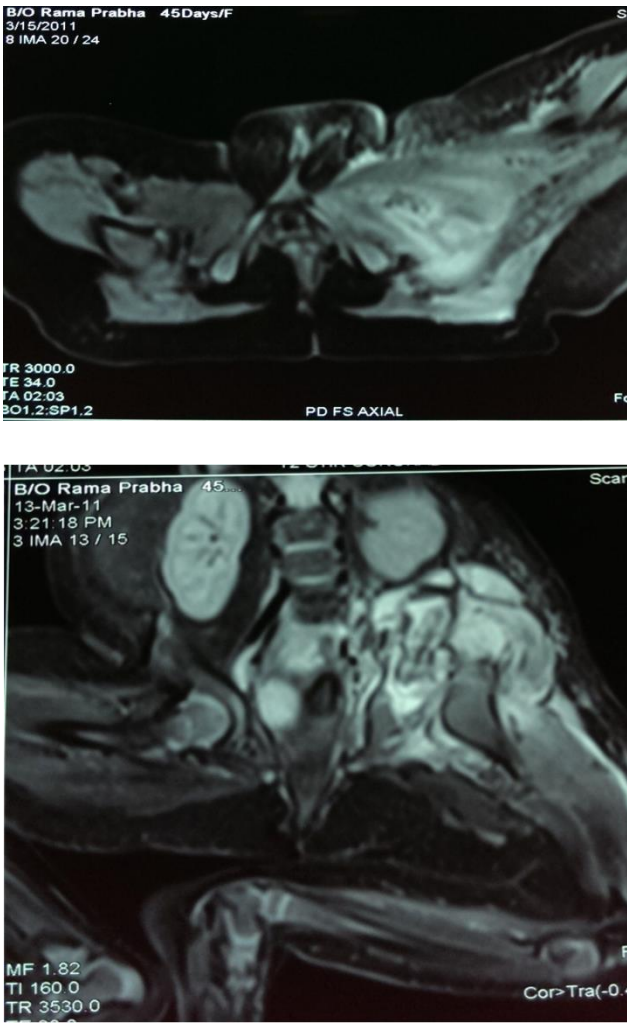
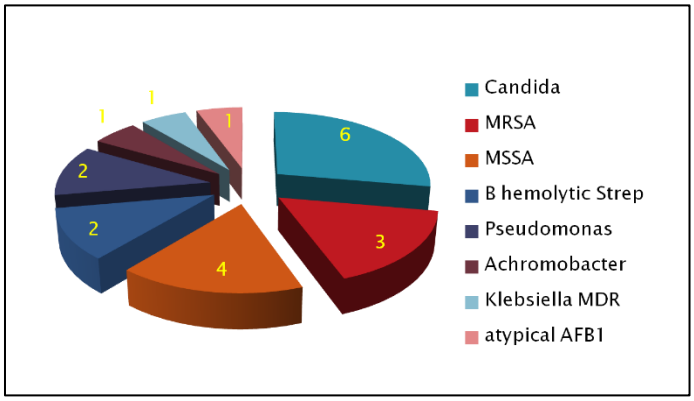
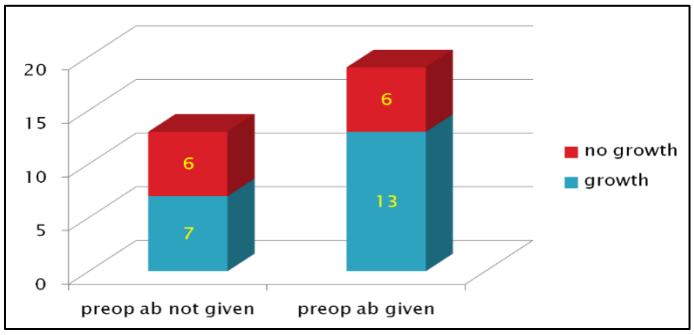


Fig: Septic arthritis of the left hip joint with osteomyelitis of the iliac bone





In this study, 59.3% of the children had received antibiotics prior to surgical drainage of the affected joint. Even though antibiotics had been administered prior to surgery, most of them (68.4% of these children) had isolation of the bacteria. The chances of identifying the bacteria were higher with the neonates. (81% chance of culture positive septic arthritis in neonates and infants vs 27% chance in older age groups)

Candida was the culprit in 50% of the preterm neonates and 41.6% in NICU admitted

neonates. Rare microorganisms like MDR *Klebsiella* and *Achromobacter* were also grown from the synovial fluid of children with a history of NICU stay.

Conclusion

Based on our experience, results and literature we recommend that, high index of suspicion in children with septic arthritis with particular attention to preterm children and children with history of NICU admission. No single clinical feature on its own is pathognomonic for septic arthritis. Clinical diagnosis should be supplemented with appropriate investigations such as MRI. Organism should be identified by sample collection to guide appropriate culture proven antibiotics rather than empirical treatment. Candida should be high on the list in preterm babies and NICU admitted babies.

References

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