

CRP Vs Procalcitonin in Paediatrics septic arthritis! Who wins the battle?

Background

Septic arthritis diagnosis at early stage is necessary to prevent irreversible damage to joints and long-term functional disability. C-reactive protein (CRP) is commonly used as an inflammatory marker, procalcitonin (PCT) has been proposed to be more specific biomarker for bacterial infections; however, comparative evidence is limited.

Materials and methods

This prospective observational study was conducted at Sri Guru Ramdas Medical College and Hospital, Amritsar, from 15 October 2017 to 19 October 2020, to compare the diagnostic performance of CRP and PCT in pediatric septic arthritis. Seventy children aged 1–16 years presenting with acute monoarticular arthritis and clinical suspicion of septic arthritis were taken for study. Serum CRP and PCT levels were measured at presentation. Final diagnosis was established based on clinical findings, culture results, radiological findings and response to treatment. Diagnostic accuracy was assessed using receiver operating characteristic (ROC) curve analysis.

Results

Children with septic arthritis had significantly higher CRP levels compared to non-septic cases ($p < 0.001$). At a cut-off value of CRP >20 mg/L, sensitivity was 92% and specificity was 85%. Procalcitonin, at a cut-off value of >0.5 ng/mL, demonstrated a sensitivity of 68% and specificity of 78%. CRP had better diagnostic accuracy with an area under the ROC curve (AUC) of 0.95, as compared with procalcitonin. CRP demonstrated a higher negative predictive value, making it a reliable marker for excluding septic arthritis in equivocal cases.

Conclusion

CRP is a more sensitive and superior biomarker than procalcitonin for early diagnosis of septic arthritis in paediatric population. Routine use of CRP can help early clinical decision-making and early orthopedic intervention, particularly in emergency settings. If early interventions like joint debridement and drainage along with appropriate antibiotic initiation done can prevent joint damage and long-term complications.