

An Analytical Study on Etiology, Clinical Features of Septic Arthritis in a Rural Medical College

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ABSTRACT

Background: Septic arthritis is also known as pyogenic arthritis or infectious arthritis. It is one of the common Orthopaedic emergencies. Septic arthritis is due to invasion of the joints by microorganisms. It may be due to penetrating injuries also. It is usually caused by bacteria and fungus and sometimes by virus also. The incidence of septic arthritis varies from 4 to 20 cases per 100,000 persons per year.

Aim of the Study: To know the different causes and clinical features of septic arthritis in a teaching hospital.

Materials and Methods: We have conducted this study in Gowri devi medical college, in the department of Orthopaedics. We have conducted this study for 6 months from November 2021 to May 2022. We have included 45 patients in this study, out of these 45 patients, 16 patients were males 12 are females and 17 patients are in paediatric age group.

Results: We have included 45 patients in this age group, out of these 45 patients 16 are Male patients, 12 are Female patients and 17 are in paediatric age group. The common age group involved is between 20 and 70 years in adult group.

Conclusion: Septic arthritis is one of the major Orthopaedics emergencies. Children and old age people are affected more commonly. It is associated with high morbidity and mortality.

Keywords: Infections, Arthritis, Microorganism, Effusion, Knee Joint, Morbidity.


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INTRODUCTION

Septic arthritis is a painful infection in a Joint that can come from germs that travel through blood stream from another part of the body, septic arthritis can also occur when a penetrating injury, such as animal bite or trauma, delivers germs directly into the joint. Children and older adults are more likely to develop septic arthritis. People who have artificial joints are also at risk of septic arthritis. Knee joints are most commonly affected and other joints involved are hip and shoulder.¹ The infection can severely damage the cartilage and bone within joint. Septic arthritis can be caused by bacteria, fungal and viral infections. The most common organism is streptococcus aureas, haemophilus, klebsiella pneumoniae.² Septic arthritis is a true orthopaedic emergency, delay in its diagnosis and treatment can lead to disastrous complications like destruction of articular cartilage, epiphysial damage, and dislocation of joints. According to one study 39.7% of knee joint; 28% of hip joint; and 13.8% of ankle joints are involved.³

The most common symptoms are redness, heat, pain and swelling in a single joint associated with decreased ability to move the joint. The most common organisms are staphylococcus aureus,

Escherichia coli and pseudomonas aeruginosa. Septic arthritis occurs in about 5 people per 100,000 each year.⁴ The other organisms involved are Neisseria gonorrhoeae, bacilli borrelia, Fungal and mycobacterial and HIV infections are rare causes of septic arthritis, Staphylococcus aureus is most common causes in most age groups, can be caused by skin infection, previously damaged joints, prosthetic joints and intravenous drug abuse.⁵ Microorganisms in the blood may come from infections elsewhere in the body such as wound infections, urinary tract infections, meningitis or endocarditis. Rate of septic arthritis varies from 4 to 29 cases per 100,000 persons per year, depending on underlying medical conditions and joint characteristics. For those with septic joint 85% of the cases have an underlying medical conditions like diabetes, immune compromised conditions like HIV, renal failure and hepatitis virus infectious. Having more than one risk factor greatly increases risk of septic arthritis. The risk factors include age above 80yrs, diabetes, osteo arthritis, Rheumatoid, arthritis, immunosuppressive drugs, intravenous drug abuse, recent joint surgery, hip or knee prosthesis, skin infections HIV, and other infections.

MATERIALS AND METHODS

This study has been conducted in the department of orthopaedics for 6 months from November 2021 to May 2022. We have included 45 patients in this study, out of these 45 patients; Males were 16, Females patients were 12 and Children were 17. We have examined all the patients in detail, after obtaining the complete history. We have obtained the consent from all the patients by giving consent form in their local language. We have advised the investigations like, complete blood picture, random blood sugar, blood urea, serum creatinine, serum electrolytes, x-ray of the affected joint, CT scan and in some cases pus was aspirated and send for culture and sensitivity. The entire data was collected and compiled in systematic manner and computerized by using MS Office.

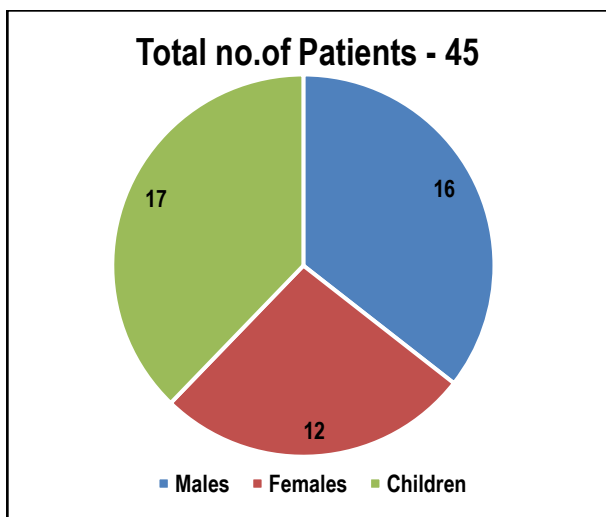


Table 1: Different Age Groups (Adults)

Age Grp in Yrs	No. of Patients	
	M – (16)	F – (12)
20 – 29 yrs	3 (18.7%)	1 (8.3%)
30 – 39 yrs	2 (12.5%)	1 (8.3%)
40 – 49 yrs	2 (12.5%)	3 (25%)
50 – 59 yrs	3 (18.77%)	4 (33.33%)
60 – 70 yrs	6 (37.5%)	5 (41.6%)

Table 2: Different Age Group in Children

Age Group in Yrs	Total No. of Children 17
1 – 5 yrs	8 (47.05%)
6 – 10 yrs	6 (37.2%)
10 yrs and above	3 (17.6%)

Table 3: Different Clinical Features

Symptoms	No. of Pts		Children (17)
	M (16)	F (12)	
Pain	16 (100%)	12 (100%)	17 (100%)
Fever	14 (87.5%)	10 (83.1%)	13 (76.4%)
Swelling of joint	9 (56.2%)	5 (41.5%)	9 (52.9%)
Others	3 (18.7%)	2 (16.6%)	2 (11.7%)

Table 4: Different Joints Involved

Different Joints	No. of Pts		Children (17)
	M (16)	F (12)	
Knee Joint	9 (56.2%)	7 (58.3%)	10 (18.33%)
Hip Joint	3 (18.7%)	2 (16.6%)	5 (29.4%)
Shoulder Joint	2 (12.5%)	2 (16.6%)	1 (5.8%)
Other Joints	2 (12.5%)	1 (8.33%)	1 (5.8%)

RESULTS AND DISCUSSION

In our study we have included 45 number of patients out of these 45 patients Males were 16, Female patients were 12 and children were 17 adults, the common age group affected is among 6th and 7th decade 37.5% and 41.7% respectively and in paediatric age group, the commonest age group affected is below 5 years. (47.05%). According to study conducted by Michelin L, Weber FM et al shows in the adult group 33.3% and 46.5% respectively. Whereas in paediatric age group it is around 39.2%.⁶ The common clinical features in our study are pain (100%); fever is in 87.5% in males, and 83.5% in females and in children it is 76.5%. The swelling is seen in 56.25% of Males and 41.5% of females and in children it is 52.94%, swelling is mostly associated with effusion of joint. The observations made by George J, Chandy VJ et al show pain is in 100% of patients; fever is in 86.35% of patients and swelling is in 49.15% patient. According to one study⁷ the common joints affected in order of priority are knee joint 49.5%; Hip Joint 24.6%; shoulder joint 16.7%. In our study we noticed knee joint involvement in 56.2% of males and 58.3% of females and 58.8% of children. The hip joint is involved in 18.67% and 16.6% and 29.47% respectively. And shoulder joint involvement was seen in 12.5%; 16.6% and 5.8% in males, females and children respectively. The study conducted by Ruksasakul R, Narongroeknawin P et al shows that knee joint was affected in 62.3%; hip joint was affected in 21.5%.⁸ Most studies shows that the common organism in septic arthritis are streptococci, Pneumococcus, and H. influenza worldwide and in a smaller number of cases the organism is viral and fungal also. When effusion is formed, the fluid should be aspirated under aseptic precautions and send for culture and sensitivity for appropriate antibiotic therapy. Our current study focused primarily on the bacterial septic arthritis.

In children, streptococcus pyogenes and haemophilus influenza are common, fungal infectious are common in immune compromised patients and in patients who are on steroids. Broad spectrum antibiotics were given to all the patients. 34 patients (82.5%) of were treated non operatively with proper antibiotics depends on causative organisms, age and other criteria. 11 patients (18%) were treated surgically. Operative treatment by arthrotomy copious lavage, with normal saline followed by a negative suction and drain was done. The response to conservative treatment was measured by 1. Increased CRP and high ESR, 2. High synovial fluid leucocyte count, 3. Culture positive. Non operative treatment was done with parenteral antibiotics and aspiration of fluid from affected joints.

Septic arthritis is also known as pyogenic arthritis or infectious arthritis. It is one of the serious orthopaedic emergency conditions. Septic arthritis represents an invasion of a joint space by a wide range of microorganisms, most commonly bacteria, viruses and fungi. Our current study mainly focused on bacterial septic arthritis. Reactive arthritis represents a sterile inflammatory condition. The high vascularised joint synovium lacks a limiting basement membrane, so is prone to infection via haematogenous seeding from systemic infection. Septic arthritis may also result from direct injury, puncture wounds and intra articular infections.⁹ Contiguous spread may occur. The hip and shoulder are vulnerable to contagious spread. Septic arthritis occurs when there is bacterial invasion of the synovium and joint space followed by an inflammatory process. Inflammatory cytokines and

proteases mediate joint destruction. Other factors which play a role in joint damage are bacterial toxins and microbial surface components like staphylococcal adhesives which promote the binding of bacteria to interarticular proteins.

In our study, staphylococcus aureus was the commonest organism which causes acute septic arthritis. The study conducted by Rosenthal also shows similar results. Staph. Aureus is also common in pediatric age group.¹⁰ If the diagnosis is delayed, the prognosis is poor. In our study the delay is due to, delayed diagnosis, improper antibiotics by local general practitioners and not associated with immobilization of the part and aspiration of joint.

The results were excellent in the patients with staph aureus 67.79%. Whereas the arthritis because of pseudomonas aeruginosa and Escherichia coli were having poor response. The study conducted by pally W. et. Al shows similar results.

The knee joint which is considered as super facial joint has excellent (73.85%) results, ankle joint has also excellent prognosis 67.74%. In the deeper joints are having shoulder 52.25% fair 47.75% poor result. Whereas hip joint in having 48.75% fair result and 38.25% are having poor results.

CONCLUSION

Septic arthritis is one of the major Orthopaedics emergencies. Children and old age people are affected more commonly. It is associated with high morbidity and mortality. The results are good in knee joint arthritis, poor in hip joint arthritis. Early diagnosis and early intervention reduce the morbidity and mortality

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