
Brief Report

Surgical Intervention for Treatment of Septic Arthritis in Infancy and Childhood; A Retrospective Study

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Septic arthritis is a fearful condition because of its mortality and the potentially late sequels on immature skeleton including limb shortening, osteomyelitis, destruction of joint surface, severe limitation of motion, and dislocation.

This study was performed to reveal the final outcome of our patients and find out the possible risk factors of poor result.

The case records of 243 children who were admitted with the diagnosis of septic arthritis in Imam Khomeini and Bu Ali Sina Hospitals, Mazandaran Province, were studied between 1996 and 2005. The diagnosis was based on clinical and ultrasound findings in all patients and positive smear in 67% of them.

Among these patients, we had access to 162 cases who had definitely septic arthritis and went through surgical interventions because of the involvement of the hip joint or uncertain response to medical treatments. As four out of six poor outcome cases were related to hip sepsis, hip was the main site of involvement and complications.

Six cases of severe complications out of 162 showed the favorite result due to early diagnosis and intervention and highlighted the grave prognostic factors which were delayed diagnosis, infantile age and hip sepsis.

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Introduction

Septic arthritis which once was a fatal disease has gained a large number of advantages from development of various antibiotics and general progress in the management of septic patients so a disease whose mortality was 50% in 1874 as described first by Thomas Smith turned to 1% mortality in 1973 as reported by Gillespie.¹

Nowadays, septic arthritis is fearful not because of its mortality but because of the potentially late sequels on immature skeleton including limb shortening, osteomyelitis, destruction of joint

surface, severe limitation of motion and dislocation.²⁻⁴

The rate of these devastating outcomes and the ominous factors behind their emergence is the site of considerable controversy.⁵⁻⁸

The referral center for complicated pediatric and orthopedic cases in Sari, Mazandaran Province, is Imam Khomeini Hospital, so we had the opportunity to treat a considerable number of children with septic arthritis. This information of these patients inspired us to review their documents and evaluate the long-term results of septic arthritis in infancy and childhood.

Patients and Methods

We reviewed the case records of 243 children with septic arthritis who were admitted with the diagnosis of this disease in 10 years between 1996 and 2005 in Imam Khomeini and Bu Ali Sina Hospitals in Sari, Mazandaran Province. One hundred sixty-two children with the final diagnosis

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of septic arthritis and surgical intervention as a part of their treatment who were accessible for re-evaluation entered our study. We considered the length of their symptoms before admission, the patients' age and initial signs and symptoms and the result of the laboratory investigations. We recalled all the patients for the final evaluation which took place on average seven and half years later.

Results

Hip was the leading site of involvement in our series with 95 cases out of 162, followed by knee 42, elbow 11, shoulder and ankle 4 cases each. Six patients had sepsis of the small joints of foot. In two patients, hip involvements were bilateral and simultaneous.

Twenty one patients were infants (birth to 4 weeks), 43 in infantile period (4 weeks to 2 years), and the remaining 98 cases were between 2 years and 14 years. Table 1 shows the treatment results of septic arthritis in 21 neonates of this study.

Restlessness, poor feeding and restricted limb motion were the most common chief complains in patients younger than 2 years. The most prevalent presenting complaints for the older children were limping and inability to weight bearing in 102 and fever in 19 cases.

In 159 (98%) patients, ESR was more than 30. Ultrasonography showed intra-articular effusion in all patients. The plain X-ray was normal in all patients but in two delayed cases of more than 2 weeks, periosteal reaction and discrete rarification of juxta-articular bones were detected.

Smear of the retrieval fluid by arthrocentesis or arthrotomy was positive for gram positive cocci in 108 (67%). Positive culture was present in only 67 cases (41%) and in 63 of them *Staphylococcus aureus* was grown.

From January 2007 to April 2007, the patients re-examined for the late sequels of septic arthritis. The follow-up period varied between 13 months and 135 months with a mean of 90 months.

In six cases (3.7%) severe complications were detected as follows:

1) Pathologic dislocation, severe deformity of femoral head and osteomyelitis, each in one case of infantile hip sepsis (3 cases)

2) Severe limitation of motion associated with olecranon osteomyelitis and apparent decrease in joint space in X-ray in one case of septic arthritis of elbow with an 8-day delay in getting appropriate treatment.

3) One case of destruction of the proximal interphalangeal joint of the second toe.

4) One case of osteomyelitis of proximal femur among the cases of childhood involvement of hip.

Beside these catastrophic problems, in 18 cases, chronic muscular atrophy relative to contra-lateral limb was noted.

Discussion

If we had depended on positive bacteriologic studies for establishment of the diagnosis, we would have missed most of the patients. It seems to be a global problem, as the probability of finding microorganisms in gram smear or culture varies from 29% in the report of Timsit et al.⁹ to 76% in the paper of Chen et al.¹⁰

When it comes to the prognostic factors, significant controversy can be seen in the literature. Is it age or delay in treatment which dictates the poor outcomes?

Our result is in accordance with the studies of the researchers who show that the worst prognosis is seen in the neonates but we cannot confirm it as an independent factor from delay in diagnosis. Chen et al. believe that if there is an equal interval between diagnosis and treatment, there would be no difference in final outcome among younger and older children.¹⁰

During these years, we had been committed to the old but still reasonable policy of early arthrotomy in the hip joint and using our knives just in cases of equivocal response to antibiotics and aspiration in septic arthritis of other joints. We do believe that morbidity of surgery could be much lower than over dependence on wait and see policy. As Goergens et al.⁴ have believed that aspiration is enough for the decompression of hip, they have tried to introduce it as an alternative for early arthrotomy after the neonatal period.

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Table 1. Result of treatment of 21 neonates with septic arthritis.

Joint	Number	Poor result
Hip	11 (%52.3)	3
Knee	5 (%23.8)	0
Shoulder	3 (%14.2)	0
Elbow	2 (%9.7)	0

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