Early mobilization in septic arthritis

14 children followed for 2 years

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Fourteen children with septic arthritis were treated by arthrotomy, intravenous antibiotics, and early mobilization of the joint.

Willems (1919) was the first to report on the treatment of septic arthritis by arthrotomy and immediate mobilization. Good results with this method were reported by Ballard et al. (1975) in pyogenic arthritis of adult knees and by Wittels et al. (1984) in interphalangeal pyogenic arthritis. Our experience in the treatment of septic arthritis in children by early mobilization of the joint after surgical drainage is presented.

Patients and methods

Fourteen children, average age 3 years (2 weeks–9 years) with pyogenic hematogenous arthritis were included in the study (Table 1). The hip was involved in 6 children, the knee in 5, the shoulder in 2, and the elbow in 1. All the children had been in good general health prior to the onset of arthritis. The clinical course was characterized by systemic fever, which in most cases was related to upper respiratory infection or otitis media. This was followed by pain, limping, or a motionless limb, swelling, and tenderness of the affected joint. On presentation, blood was obtained for a white cell count, erythrocyte sedimentation rate (ESR), and culture. A radiograph of the involved joint was taken. The joint was aspirated and considered septic with a positive Gram's stain or a white cell count of more than 50,000 white blood cells per mm^3 of which more than 90 percent were polymorphonuclear leukocytes (Nade 1983). All the children had been given oral antibiotics before referral. Intravenous antibiotic therapy was started immediately, chosen initially on a "best guess" basis (Nade 1983) and changed according to the results of culture. The antibiotic treatment was continued intravenously for 3 weeks followed by oral antibiotics for another week. If cultures were negative, broad-spectrum antibiotics were given.

In all the children, the involved joint was drained by arthrotomy, which was closed primarily over a suction drain. No traction, splint, or plaster was applied.

The average delay from onset of systemic symptoms to initiation of treatment was 4 (3–6) days. Symptoms related to the involved joint were noted 1 to 3 days before admission. Drainage of the involved joint was performed within the first 12 hours of admission.

The infecting organisms were *Staphylococcus aureus* in 8 children and *Hemophilus influenza* in 2. Joint-fluid cultures were negative in 4 children. In the latter, the white cell count of joint fluid exceeded 86,000 mm^3. The average ESR was 63 mm. The average white blood count was 17,000 mm^3. The fever returned to normal 24 to 72 hours after the drainage. Active limb motion was started 1 to 3 days after the arthrotomy.

Passive motion of the involved joint was resumed on the first day after drainage. This was continued and gradually increased as much as the child could tolerate. Passive motion was continued until the child resumed active motion spontaneously. Older children, in addition, were encouraged to move their affected limb actively as much as they could. Weight bearing was encouraged as soon as possible. The range of movement at discharge was recorded. All the children were followed up routinely every 6

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to 12 months. The average follow-up was 2 (1–4) years. A second radiograph was taken following the arthrotomy and during the follow-up period.

Results

On discharge the children had only slight limitation of the involved joint, mainly in extension; this did not interfere with their ability to walk. Older children started to walk 1 week to 10 days after the arthrotomy, gait being almost normal at discharge from the hospital 3 to 4 weeks after admission.

At follow-up the infection was eradicated in all the children and without recurrence. All the children were free from pain and had a full range of motion in the involved joint with normal gait. In all but 1 child, radiographs were normal. The exception had a neonatal septic knee with partial destruction of the medial tibial plateau.

Discussion

Several authors (Paterson 1970, Wilson and Di Paola 1986) claim that immobilization is essential in the treatment of septic arthritis. Recent animal experiments show that immobilization alters the morphologic, mechanical, and biochemical characteristics of joints, such as proliferation of connective tissue, atrophy of cartilage, and decrease in collagen content (Akeson et al. 1987). Moreover, Ekholm (1953) showed the importance of motion for the nutrition of the articular cartilage, whereas Salter et al. (1981) proved that early passive motion protects damaged articular cartilage from degeneration caused by infection. Green and Edwards (1987) recommended traction after hip drainage followed by motion once the acute infection had subsided. The good results obtained in our patients support these studies.

Dislocation of the hip after infection is a well-known complication in infants. Thus, Lloyd-Roberts (1960) and Obletz (1960) recommended draining the hip and holding it in the reduced position with an abduction cast for 3 weeks to 18 months. Because the hip was stable in all of our patients, it was not necessary to immobilize the joint, and the children were allowed to move freely.

Finally, mobilization of the affected joint has the the additional advantage of facilitating nursing care.

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