RATIONALE

The treatment of choice for septic arthritis in children is irrigation and debridement of the septic joint to clear the joint of bacteria and destructive enzymes and also decrease the intra-articular pressure to avoid articular cartilage damage and ischemia [1,2].

Septic arthritis of the hip joint has been posited as an emergent condition in pediatric patients often requiring open arthrotomy as soon as confirmation of the disease is made with joint aspiration [1–5].

There are a few reports that show equivalent outcome for treatment of hip septic arthritis when arthroscopy versus arthrotomy was employed [6,7]. Repeated aspirations of the hip joint under ultrasound guidance was shown to be effective in 85% of children without the need for an arthrotomy [4,8–11]. The indication for surgical treatment of septic arthritis of other joints remains controversial. Drainage of any large effusion present in joints is usually advocated. In ankle, knee and shoulder joints, arthroscopic irrigation or aspiration and lavage may be appropriate [1,3].

There is no consensus for the time, type and extent of surgical procedures in patients with osteomyelitis [1]. Surgery is recommended in the presence of subperiosteal abscess, bone necrosis or direct invasion of the growth plate that may be seen in magnetic resonance imaging (MRI) images [2]. It is also indicated if a patient does not respond to antibiotic therapy, based on clinical examination, laboratory indices and imaging studies (particularly MRI) [1].

The decision to drain a subperiosteal collection seen on ultrasound cannot be based purely on the size of collection but needs to take into account the clinical findings of the patient and the response to antibiotic therapy [12–14].

During surgical intervention often a cortical window is created [1,15], but the optimal treatment for sub-periosteal abscess remains controversial in terms of whether or not a corticotomy or intramedullary drainage needs to be performed [1,16,17]. There is limited evidence to suggest that subperiosteal drainage alone is adequate management for a subperiosteal abscess [18–20].

Montgomery et al. [21] in a retrospective comparative study demonstrated that in patients with subperiosteal abscess, intramedullary drainage significantly decreased the need for repeat surgery. Another factor to consider when dealing with pediatric patients with septic arthritis is the virulence of the infective organism. In patients with methicillin-resistant *Staphylococcus aureus* (MRSA) infections, more aggressive surgical intervention is warranted, as these patients are at risk of relapse and often need repeated surgeries [15,22–24].

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QUESTION 3: Is there a role for arthroscopic washout in children with septic arthritis?

RECOMMENDATION: Yes. Arthroscopy is a useful tool in the treatment of septic arthritis in children.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 83%, Disagree: 10%, Abstain: 7% (Super Majority, Strong Consensus)

RATIONALE

Early diagnosis of septic arthritis (SA) in the pediatric age group is essential in order to avoid adverse sequelae associated with delayed SA, such as osteonecrosis, chondrolysis, relapse or recurrent SA and sepsis, and is more important than the type of drainage[1–3].

For decades, the prevailing treatment of pediatric SA after early diagnosis was open arthrotomy, irrigation and debridement [2,4,5]. The optimal technique for drainage is controversial between needle aspiration, arthrotomy or arthroscopy. Arthroscopic drainage in adults with knee SA is the accepted treatment of choice, as functional outcome and success of treatment is better using this method of treatment [6,7]. Arthroscopic treatment of SA in pediatric patients is defined as a successful option for septic arthritis of the hip, knee, ankle and shoulder in children [8,9].

Despite concern about traction in septic hips during the infection process, several studies have demonstrated its safety [10–13].

Kim et al. and Chung et al. reported good results of hip arthroscopy utilization in SA [11,14,15]. In a prospective comparative study on hip SA, children treated arthroscopically had better functional outcomes (90% excellent vs. 70% in open arthrotomy group), significantly shorter hospital stays and a lower rate of scarring due to the less invasive nature [16].

A recent study with a 2.5-year follow-up supported these results [9]. In these reports, all repeated drainage was done arthroscopically, and it was safe for even very young children.

In a 7-year follow-up comparative study of arthroscopic washout vs. open arthrotomy, Johns et al. reported reduced rates of repeat drainage, earlier knee range of motion and weight-bearing in the arthroscopic arm; however, these trends did not reach a statistically significant difference [17].

In a series of 76 children with arthroscopically-treated septic arthritis, a combination of arthroscopic lavage and antibiotic therapy successfully eradicated infection in 91% patients, and open revision was only required in 4% of these cases [18].

In summary, arthroscopic washout is a useful procedure for the treatment of pediatric septic arthritis, but the evidence is weaker than in the adult literature. Limited sample size and an absence of randomized clinical trials are evident in both knee and hip SA in the pediatric setting. Thus, there is no definitive evidence to support arthroscopic washout over open arthrotomy in children.

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QUESTION 4: Should the length of antibiotic usage be different for a primary septic arthritis (SA) versus osteomyelitis (OM)?

RECOMMENDATION: Although there is a tendency towards prescribing a longer course of antibiotics in pediatric patients with OM compared to primary SA, this practice is not based on conclusive evidence.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 93%, Disagree: 2%, Abstain: 5% (Super Majority, Strong Consensus)

RATIONALE

For decades, it has been believed that a prolonged course of antibiotic therapy (four to six weeks) is necessary to improve long-term outcomes when treating OM and SA in children [1–3]. In recent years, the efficacy of prescribing a prolonged course of antibiotics in the treatment of SA has begun to be questioned. Recent studies, including clinical trials, have demonstrated that a shorter duration (less than one week) of antibiotic therapy, in particular intravenous antibiotics, is effective in treating selective groups of pediatric patients with musculoskeletal infection while reducing length of stay, complications and healthcare costs [4–9].

Jagodzinski et al. demonstrated in a prospective study that three to five days of parenteral antibiotic therapy was sufficient for treating osteoarticular infection in children [10]. However, the Infectious Diseases Society of America (IDSA) currently recommends