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QUESTION 1: Are pediatric patients on oral or intravenous steroids at an increased risk of developing septic arthritis?

RECOMMENDATION: Unknown. There is no definitive link between the use of oral or intravenous steroids and development of septic arthritis in pediatric patients.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 86%, Disagree: 5%, Abstain: 9% (Super Majority, Strong Consensus)

RATIONALE

Septic arthritis is an infection of joints that spreads through systemic or local bacterial, viral or fungal infection. The overall prevalence of septic arthritis is relatively higher among children who are less than 4 years old. The incidence of septic arthritis has been reported to be 10 cases per 100,000 population and as high as 20 to 70 cases per 100,000 in patients with rheumatoid arthritis in the USA. The disease usually spreads through hematogenous system mainly due to intravenous drug use or prolonged use of a catheter and low immunity. The most common predisposing conditions that can develop into septic arthritis are rheumatoid arthritis, gout or osteoarthritis. In children, the hip is most commonly affected joint by septic arthritis as compared to the knee in adults accounting for 50% cases.

Computerized research of databases (PubMed, Medline Ovid and Google Scholar) was used for the literature review from 1950 to 2018. The shortage of literature could not directly link IV or oral steroid therapy as a risk factor for children to develop septic arthritis as an adverse reaction. Many randomized clinical trials were, however, found to be in favor of the prolonged use of IV and oral corticosteroid to avoid complications in pediatric patients suffering from septic arthritis and no further complications were observed that lead to the worsening of this disease [1–3]. There is still a debate whether immunosuppressive drugs, such as corticosteroids and cytotoxic agents, increase the risk for septic arthritis [4]. The potential association between administration of steroids and septic arthritis may be explained by the fact that steroids reduce the body's immunity and ability to fight infection [4]. One of the indirect causes of septic arthritis was found to be iatrogenic in 41.8% of adults, and the number of iatrogenic infections in Iceland increased from 2.8 cases/year in 1990–1994 to 9.0 cases/year in 1998–2002 ($p < 0.01$) [5]. These iatrogenic infections can be linked to the use of unsterile intra-articular injections, possible use of contaminated needles or a break in the sterility during arthroscopic procedures [6,7].

The study conducted in the USA reported 32 cases of septic arthritis due to fungus-contaminated methylprednisolone vials [8]. However, these studies lacked proper evidence as these were descriptive in nature. These studies also did not fulfill our inclusion and

exclusion criteria as it does not show a direct relationship of septic arthritis with steroid therapy rather than being an iatrogenic infection.

A case report published in 1957 reported septic arthritis as a reaction to steroid therapy in a woman who was 34 years old; she had been receiving corticotrophin, cortisone, hydrocortisone and prednisolone at various times in a year for the treatment of lupus erythematosus. A similar presentation was found in a man 54 years old suffering from exfoliative dermatitis and was getting treated with the same medicine. The steroid therapy resulted in septic arthritis of one knee and both hands including disfigurement of his fingers. Unfortunately, this study could not hold much evidence as it had a weak study design and the lowest number of reported cases. It also included adult patients so it cannot be generalized to children [9].

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