Disseminating Septic Arthritis Following Hip Hemiarthroplasty

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The incidence of septic arthritis in patients with risk factors, such as hip or knee prosthesis, immunodeficiency, old age, diabetes and preexisting joint disease, is rising. *Staphylococcus aureus* is the cause in more then 60% of positive cultured joint aspirations, Bacteremia can lead to polyarticular involvement in up to 15% of cases with septic arthritis [1]. We report a case of a patient who sustained polyarticular septic arthritis and septic shock following hemiarthroplasty of the hip. A review of the English-language medical literature did not reveal any similar cases. Early detection of disseminating septic arthritis is of paramount importance to reduce the high morbidity and mortality associated with this condition.

PATIENT DESCRIPTION

A 75 year old man with a medical history of gout arthritis, congestive heart failure and chronic renal failure was admitted to our department with right subcapital fracture of the femur. He underwent an uneventful hip hemiarthroplasty.

Two weeks following the surgery an evacuation of hematoma was performed elsewhere (due to wound dehiscence) and daily wound care with wet to dry bandage was begun. A week later an ipsilateral knee swelling was documented. Deep vein thrombosis was ruled out by Doppler sonography. The patient returned to hospital a month after the hemiarthroplasty, with methicillin-resistant *Staph. aureus* and *proteus* infection from the right hip, which was treated with vancomycin and ertapenem intravenously. A few days later, a profound swelling at both ankles and right knee, with clinical evidence of septic arthritis, required an immediate arthrotomy of the involved joints. A large amount of pus was drained from the joints. The patient was transferred to the intensive care unit, and 2 months following his primary hip hemiarthroplasty he died due to multi-organ failure. Consent for postmortem examination was not attained.

COMMENT

Septic arthritis is an important medical emergency condition, with two peaks in the incidence that seem to be age dependent: one under the age of 15 and the other over 55. The incidence of polyarticular involvement of septic arthritis is widely underestimated. Dubost et al. [1] reviewed over 200 cases of septic polyarthritis and found that polyarticular involvement compromised 15% of all septic arthritis cases. In 50% of patients with polyarticular involvement a preexisting joint disease is found, such as rheumatoid arthritis, osteoarthritis, gout, pseudogout, and systemic lupus erythematosus with involvement of three joints; the knee is most commonly affected followed by the elbow, shoulder and hip.

There is significant morbidity and mortality associated with septic arthritis. Permanent joint damage occurs in up to 50% of cases and mortality in up to 10–16%. Polyarticular involvement is associated with a mortality rate as high as 30% [2]. Numerous studies found that normal joints are very resistant to infection whereas diseased joints or prosthetic joints are more susceptible, probably due to increased risk for bacteremia and decreased ability to eliminate organisms from the joint. Major risk factors include systemic disorders that reduce the immune response such as diabetes mellitus, diseases that affect the joints as detailed above, and sepsis. An important predisposing factor for septic arthritis, in particular due to *Staphylococcus aureus* as the causative organism, includes local factors such as damage of a specific joint due to trauma or surgery, or the presence of a prosthetic joint [3]. Virtually any microbial pathogen is capable of causing bacterial arthritis. *Staph. aureus* is most common in both native and prosthetic joint infections, followed by *Streptococcus pyogenes* and *Streptococcus pneumoniae*. *Staph. epidermidis* is much more common in prosthetic joint infections than in native joint infections. Gram-negative bacilli comprise only 15% of adult septic arthritis, but there is an increased risk for infections by these organisms in drug users or immunodeficient patients.

The classical clinical presentation of bacterial monoarthritis is an acute, painful, hot and swollen single joint; however, in about 10–15% of patients there will be polyarticular involvement in which up to three joints in asymmetrical fashion are affected. The knee joint is affected in 50% of polyarticular septic arthritis cases.

The diagnosis of septic arthritis is based on clinical presentation and confirmed by aspiration of the joint. The synovial fluid of septic arthritis is usually purulent; a leukocyte count of 50,000 or more cells/mm^3 should raise a high grade of suspicion for septic arthritis [4]. Gram stain is positive only in 60–80% of cases. Elevated lactate dehydrogense and decreased glucose levels are seen in septic arthritis as well as in inflammatory disease. Prompt treatment with antibiotics together with removal of any purulent material is the mainstay of treatment for septic arthritis. There is no evidence for one choice of drug regimen or duration of intravenous treatment showing superior results. The choice of antibiotic is based on the likelihood of the organism involved [5]. In the past the method of joint drainage was controversial; it is accepted today that the use of surgical drainage is preferable over needle aspiration in infected joints.

In conclusion, the possibility of polyarticular septic arthritis should be carefully considered in any patient with known risk factors. An understanding of the risk factors and a high grade of suspicion is crucial to avoid delay in making the correct diagnosis and reduce the serious morbidity and mortality associated with this disease.

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