

clinical importance of recognizing periprosthetic infection is high enough that some surgeons prefer maximizing sensitivity even at a slight cost of specificity. For example, Kwiecen et al. [4] recently reported sensitivity of 73.7% and specificity of 98.8% for a FS obtained at hip and knee arthroplasty using a threshold of 5 neutrophils in only 3 or more HRFs (the same threshold used in both studies by George et al. described above).

As noted above, the thresholds used to support the presence or absence of periprosthetic infection have been reported mostly from specimens obtained at intended primary revision arthroplasty. Patients with known periprosthetic infection are often treated with the two-stage procedure and it is thought that the surgery and presence of an antibiotic-containing spacer may alter the results of tests commonly used to diagnose infection, including serologic markers, joint aspiration with cell count, microbiologic cultures and possibly histology [2,17,18]. Although few published studies have included enough information to document sensitivity and specificity of different diagnostic thresholds for recognizing persistent infection at the second-stage of a two-stage operation for known infection, the results summarized here show similar values as those reported for FSs obtained at primary arthroplasty. Additional studies, including the use of special stains and rapid molecular tests are needed to help document either persistent infection or adequate resolution of the infection at the time of reimplantation.

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QUESTION 8: Should patients with periprosthetic joint infections (PJIs) caused by Mycobacterium tuberculosis (TB) undergo the typical two-week antimicrobial holiday prior to reimplantation?

RECOMMENDATION: There is no evidence supporting the two-week antimicrobial holiday before reimplantation. Patients with PJIs caused by TB do not need to have the two-week drug holiday.

LEVEL OF EVIDENCE: Consensus

DELEGATE VOTE: Agree: 88%, Disagree: 6%, Abstain: 6% (Super Majority, Strong Consensus)

RATIONALE

TB is a rare cause of PJIs for which management is not clearly standardized [1,2]. This may be due to the little clinical suspicion and the difficulty in diagnosing this entity [3]. Literature reflects this infrequency with very few publications, the majority being case reports [2,4-14]. McCullough et al. [14] were the first to describe a prosthetic joint

involvement due to TB. They hypothesized that this occurred during a bacteremic state following reactivation of latent tuberculosis. This and other reports have shown infection control can be achieved after surgical and pharmacological treatment although no conclusions can be made as to formal and standardization of treatment.

It is important to note that in the majority of publications, treatment is mainly focused on anti-TB chemotherapy associated with surgical intervention with or without removal of the prosthesis. Surgical treatment has been seen to be controversial and sometimes not performed [9]. Pharmacological management has been similar to that administered in extra-articular TB involvement. The literature contains only one systematic review, which included 15 patients, all of whom received 2- to 4-anti-TB chemotherapy agents (rifampin (RMP), isoniazid (INH), ethambutol (EMB) and pyrazinamide (PZA)) for at least six months (range 6 to 24 months) after diagnosis [7]. Thirty-three percent of patients (5 of 15) underwent surgical treatment including debridement and retention of the arthroplasty, while 20% (3 of 15) underwent staged revision arthroplasty, for which the anti-TB chemotherapy was continued at the time to reimplantation [10,11]. According to the latest publication which also included 66 patients, medical treatment with anti-TB chemotherapy varied from 4 to 39 months, as well as in type and number of drugs [13]. However, 56.1% of patients (37 of 66) received at least 12-month treatment. Surgical treatment ranged from debridement 17% (11 of 66), debridement & polyethylene exchange 8% (5 of 66), two-stage exchange 23% (15 of 66) to removal of prosthesis followed by arthrodesis 33% (22 of 66).

The anti-TB chemotherapy, along with surgical intervention, seems to be necessary for management of PJI caused by TB. The ideal duration of antibiotic treatment for these patients is not known, but most believe that at least four months of treatment should be instituted for patients with TB PJI. In addition, it is critical to ensure that patients with PJI caused by TB have no extra-articular nidus for infection. Given the fact that TB PJI could be considered a chronic condition, we consider that any strategy towards assuring infection control or eradication should be attempted.

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