SH45. Should all cultures be sent for mycobacterial testing?

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Methodology: A comprehensive literature review was conducted to identify studies on mycobacterial infections following joint arthroplasty with a particular focus on shoulder arthroplasty. Searches were performed in PubMed and Scopus throughout November 2024 using the terms "arthroplasty," "infection," "shoulder," "prosthetic joint infection," "*Mycobacterium*," "acid-fast bacillus," and "atypical." For this systematic review, we included English-language studies (Level I–IV evidence) that reported causative organisms and culture results in cases of periprosthetic joint infection (PJI) of the shoulder, and excluded non-English articles and studies in nonhumans. This systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Seven articles met the inclusion criteria and were reviewed. Given the limited number of articles identified with the specified search terms, additional searches were conducted to identify studies on mycobacterial prosthetic joint infections and the utility of cultures outside of the shoulder literature.

Answer: Unknown.
The frequency of mycobacterial infections as the cause of PJI is low, and there are even fewer cases of mycobacterial PJI of the shoulder. In diagnosing PJI of the hip and knee joints, growing evidence suggests that routine mycobacterial cultures may not be necessary due to the low positivity rates and high costs. However, evidence regarding the necessity of routine mycobacterial cultures for diagnosing shoulder PJI remains insufficient.

Strength of Recommendation: Limited (Evidence is insufficient and does not allow a recommendation for or against the intervention)

Rationale: Reports indicate that mycobacteria are responsible for 0.3% to 1.7% of PJI cases (1-3), with the majority involving the hip and knee joints. Reviews of PJI caused by *Mycobacterium tuberculosis* (TB-PJI) have included only a limited number of shoulder cases (4, 5). For example, Veloci *et al.* (4) reported two shoulder cases among 64 TB-PJI cases (6, 7), and Uhel *et al.* (5) identified one shoulder case among 83 TB-PJI cases, including 70 previously reported cases. Similarly, in a recent report by Auñon *et al.* (8), shoulder cases accounted for 2.9% of the TB-PJI cases. These findings suggest that mycobacterial PJI of the shoulder is even rarer than that of the hip and knee joints.

In diagnosing and performing revision surgeries for PJI in the hip and knee joints, routine mycobacterial cultures are increasingly being considered unnecessary due to the low positivity rates (0%–1.2%) and high associated costs (9-12). Instead, testing is typically recommended for only high-risk cases. Recently, a study focusing on shoulder revision surgeries raised concerns about the utility of routine mycobacterial cultures in such procedures (13). In that study, mycobacterial cultures for 237 shoulder arthroplasty revision cases yielded no positive results. Moreover, atypical cultures, including fungal cultures, accounted for an estimated 53.2% of the total culture-related costs. Based on these findings, the authors concluded that mycobacterial cultures should be reserved for high-risk cases in shoulder revision surgeries.

Nevertheless, with the increasing number of shoulder arthroplasty procedures, including reverse shoulder arthroplasty, the incidence of shoulder PJI is expected to rise. Reports of mycobacterial PJI following reverse shoulder arthroplasty (14-16) have also been increasing. Given these trends, there is currently insufficient evidence to allow for a recommendation on whether routine mycobacterial cultures are necessary for diagnosing shoulder PJI. Further research is warranted to address this issue.

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