SH59: What is the role of IV vs oral antibiotics in the treatment of late shoulder PJI? Does the treatment change based on the diagnostic criteria (Definite vs Probable vs Possible)?

Liaison: Benjamin Zmistowski
Lead delegate: Mariano E. Menendez
Supportive delegate: Simon Warren

Recommendation: There is growing interest in the use of oral antibiotic therapy for the treatment of chronic shoulder PJI, but there is limited comparative evidence to support a preferred route of antibiotic administration (IV vs. oral) in this setting.

Strength of recommendation: Limited

Delegate Vote: 52 (100%) agree; 0 disagree; 0 abstain

Rationale: Periprosthetic joint infection (PJI) is an infrequent but potentially devastating complication of primary and revision shoulder arthroplasty with an incidence of 1% to 4% and 4% to 15%, respectively [1]. Management options include débridement, antibiotics, and implant retention (DAIR); one-stage revision arthroplasty; two-stage revision arthroplasty; antibiotic spacer retention; and resection arthroplasty. Regardless of the procedure type, all patients are treated with perioperative antibiotics, but the optimal route of administration (IV vs. oral) remains unclear. PubMed and Google Scholar were searched for the following keywords: "shoulder", "infection", "periprosthetic", "arthroplasty", "antibiotic" to identify relevant articles through a title screen, abstract review and, finally, a full text review to identify the relevant manuscripts.

After an extensive review of the literature, there is limited comparative evidence to support a preferred route (IV vs. oral) of antibiotic administration in the treatment of chronic shoulder PJI. It is therefore not possible to provide evidence-based antibiotic route recommendations based on the likelihood of shoulder PJI (definite vs probable vs possible). Most available studies are relatively small case series that retrospectively report their experience with treatment of shoulder arthroplasty infection, and incompletely report the antibiotic therapy following revision surgery.

A landmark randomized trial, the Oral versus Intravenous Antibiotics for Bone and Joint Infection (OVIVA) trial published in the New England Journal of Medicine in 2019 [2] showed that oral antibiotic therapy was noninferior to intravenous antibiotic therapy for complex orthopedic infections, as assessed by treatment failure at 1 year. Oral antibiotic therapy was associated with a shorter length of hospital stay and with fewer complications than IV therapy. A total of 1,054 participants who would ordinarily have been treated with 6 weeks of intravenous antibiotic therapy for one of the following acute or chronic bone or joint infections were included and randomized to the oral vs IV groups: native osteomyelitis of the extraaxial skeleton, native joint infection requiring excision arthroplasty, prosthetic joint infection, orthopedic fixation-device infection, or vertebral osteomyelitis with or without associated diskitis or soft-tissue infection. These results thereby challenged a widely accepted standard of care at the time.

A 2024 retrospective multicenter chart review from France consisting of 172 PJIs (10 of which were in the shoulder) found that oral antibiotic therapy for 6 weeks was associated with a low infection recurrence rate (9.2%) at two-year follow-up [3]. However, there was no IV group

to compare results. Similarly, Khom and colleagues [4] in 2023 reported positive results in 9 patients with PJIs caused by *C acnes* (6 cases were in the shoulder) who were treated with oral antibiotic therapy consisting of linezolid and rifampin. Seven of 8 patients within their cohort had resolution of symptoms after 3 years, and one patient was lost to follow up.

In aggregate, the literature on antibiotic treatment for shoulder PJI is primarily based on heterogeneous case series with inconsistent definitions for infection, and variable treatment protocols. While there is growing interest in the use of oral antibiotic therapy for the treatment of chronic shoulder PJI, there is insufficient comparative evidence to support a preferred antibiotic administration route at this time.

Strength of Recommendation: Limited.

References:

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4. Kohm K, Seneca K, Smith K, Heinemann D, Nahass RG. Successful Treatment of Cutibacterium acnes Prosthetic Joint Infection With Single-Stage Exchange and Oral Antibiotics. Open Forum Infect Dis. 2023 Jul 13;10(8):ofad370. doi: 10.1093/ofid/ofad370.