Sex-Specific Analysis of Clinical Features and Outcomes in Staphylococcal Periprosthetic Joint Infections Managed with Two-Stage Exchange Arthroplasty

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Background

There are anatomical, pharmacokinetic, and joint biomechanical differences between males and females. Whether these differences result in differing presentation, treatment tolerability and outcomes in periprosthetic joint infection (PJI) has not been widely evaluated.

Methods

We undertook a retrospective matched cohort analysis of patients with staphylococcal PJI managed with two-stage exchange arthroplasty. In order to control for differences other than sex which may influence outcome or presentation, males and females were case-matched for age, causative organism (Coagulase-negative staphylococci vs Staphylococcus aureus) and joint involved. Data was compiled to analyze differences in duration of symptoms, inflammatory markers, duration of hospital stay, antimicrobial side effects, post-operative complications and recurrence rate. Recurrence of infection was defined as per MSIS criteria for PJI and included both relapse with original microorganism or with an additional organism.
Results

We identified 156 patients in 78 pairs of males and females who were successfully matched. There were no significant baseline differences by sex, except for greater use of chronic immunosuppression among females (16.7% vs. 4.1%; p=0.012). Clinical characteristics and outcomes of the patients are summarized in table 1. We did not detect a statistically significant between the outcomes of the two groups. Among the 156 matched patients, 16 recurrent infections occurred during a median follow-up time of 2.9 (IQR: 1.5 - 5.3) years. The 3-year cumulative incidence of treatment failure depicted in figure 1 was 16.1% for females, compared with 8.8% for males (p=0.434).

Discussion

Success rates for PJI treated with two-stage exchange arthroplasty are high consistent with previously reported literature. A larger cohort of patients may be required to detect differences in relapse rates. This study included only staphylococcal PJI; therefore, was not able to evaluate the differences in microbiology of PJI between males and females, which could also impact outcome. This retrospective case-matched study did not detect a significant difference in outcome between males and females with staphylococcal PJI who underwent two stage exchange arthroplasty.