Unveiling Hidden Dangers: The Impact of Metabolic Syndrome on Periprosthetic Joint Infection Risks in Total Joint Replacement

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INTRODUCTION:
Metabolic syndrome (MetS), often understudied and underdiagnosed, presents a significant and devastating impact on outcomes in TKA & THA. Despite its prevalence, whether MetS increases the risk for PJI remains unknown. This study aims to identify the risk factors for chronic PJI, emphasizing on MetS as an independent risk factor.
METHODS:
A retrospective study was conducted on 12,332 adults who underwent primary TKA and THA between 2015 and 2020. Patients were classified based on the presence of MetS, defined as the existence of type 2 diabetes and at least two of the following: hyperlipidemia, hypertension, or a BMI over 30 kg/m² within one year of surgery. Of the procedures, 5,692 were performed on patients with MetS, with 62% of these being TKA. Demographics and the Charleston comorbidity index were recorded to run a multivariate regression model to evaluate the association between MetS and PJI.
RESULTS:
In patients with MetS, the incidence of PJI was 4.64%, compared to 1.4% in patients without MetS, yielding an odds ratio of 3.46 (95% CI: 2.89-5.05). Despite the increased risk of PJI among patients with MetS, no significant differences were observed in the organism profile regarding gram-positive ($P = .60$), gram-negative ($P = .054$), and drug-resistant organisms ($P = .11$). MetS ranked as the third most significant preoperative risk factor for PJI, following only AIDS (OR: 5.6, $P < .0001$) and liver disease (OR: 4.3, $P < .0002$), and exceeding the risk associated with diabetes alone (OR: 3.1, $P < .0002$). Other notable risk factors included rheumatologic diseases (OR: 1.6, $P = .005$), and alcohol abuse (OR: 1.5, $P = .044$).
DISCUSSION AND CONCLUSION:
Based on the results of this study, MetS significantly increases the risk of PJI in patients undergoing arthroplasty. These findings underscore the critical need for enhanced screening and management of MetS as a major modifiable risk factor for PJIs. Additionally, addressing broader factors contributing to MetS could further reduce these risks, pointing to a wider scope of preventive strategies in orthopedic care.