# The effectiveness of intra-articular antibiotic injection treatment of periprosthetic joint infection

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INTRODUCTION:
Periprosthetic joint infection (PJI) is a serious complication after arthroplasty, and the incidence of PJI has increased in recent years. One-stage revision, two-stage revision, and DAIR combined with intra-articular antibiotic injection (IAAI) have become valuable methods for treating PJI. This study aimed to evaluate the mid- and long-term effectiveness of IAAI.
METHODS:
In this retrospective study, the patients with periprosthetic joint infection were screened between 2010 and 2022, and we included the patients receiving the one/two-stage revision/DAIR procedure combined with or without intra-articular antibiotic injection. The patients were divided into intra-articular antibiotic injection (IAAI group) and non-IAAI group. The patients' dynamic serum ESR and CRP, synovial white blood cell (WBC) count, and polymorphonuclear neutrophil percentage (PMN%) were measured.
RESULTS: Totally, 345 patients with PJI were included. There were 181 knee PJI and 164 hip PJI. The mean follow-up was 64 months (20 to 125). The infection relapse-free prosthesis survival rate was 85% and 58% in IAAI and No-IAAI groups, respectively($P<0.0001$). Multivariate logistic regression models showed that IAAI was associated with infection relapse-free ($P<0.0001$) after adjusting for confounding factors. In the two-stage revision and DAIR subgroups, IAAI was associated with the infection relapse-free($P<0.0001$) compared to the No-IAAI group. In the IAAI group, the synovial WBC count and PMN%, serum CRP decreased rapidly after antibiotics injection and became stable after 2-4 weeks. The ESR decreased slowly and was stable after three months. However, serum CRP and ESR decreased very slowly in the No-IAAI group.
DISCUSSION AND CONCLUSION:
This study demonstrated that IAAI has better clinical outcome than Non-IAAI. Meanwhile, the serum and synovial indicators decreased rapidly in the IAAI group.