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Staphylococcal acute post-operative prosthetic joint infection (PJI) treated with 'DAIR' (debridement and implant retention) and impact of rifampin: a retrospective cohort study in France

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Background

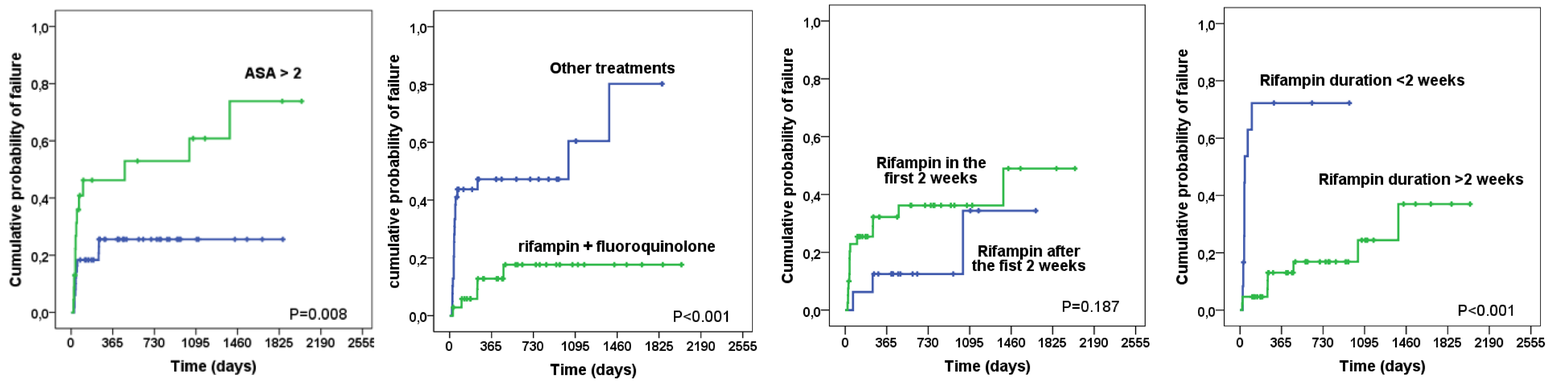
Staphylococci are the most frequent bacteria in PJI. In patients with acute PJI (i.e. <1 month following the implantation), DAIR with exchange of removal components followed by a combination of antibiotics including rifampin (RMP) (particularly RMP + fluoroquinolone) are recommended. Unfortunately, some patients could not receive RMP due to drug-drug interaction or stopped it due to an adverse event. Finally, it is unclear if the dose and the duration of RMP influenced the prognosis.

Method

Retrospective cohort study in 4 hospitals (Hospices Civils de Lyon, CH métropole Savoie, CHU Clermont-Ferrand, CHU St-Etienne) including patients with staphylococcal acute post-operative PJI treated with DAIR in 2011-2016. Univariate and multivariate Cox analysis and Kaplan Meier curves were used to determine the risk factors for treatment failure.

Results

79 patients were included (median age: 71 years [IQR 53-89]; 55 men [69.6 %]; median ASA score: 2 [IQR 2-3]). Cultures revealed 65 (82%) *S. aureus* and 15 (19%) coagulase negative staphylococci infections, including 14 methicillin-resistant strains (18 %). Among all isolates, only 2 (3%) were resistant to RMP and 16 (20%) were resistant to fluoroquinolone. The median duration of antimicrobial therapy was 92 days (IQR 31-152). Only 59 patients received RMP (75%), and 35 (44%) the combination RMP + fluoroquinolone. Median duration of RMP was 57 days (IQR 16-86) and median dose 14.6mg/kg/d (IQR 13-17). Forty patients (51%) received RMP in the first 2 weeks and 43 patients (54%) received at least 2 weeks of RMP. Six patients (8%) developed an adverse event leading to RMP interruption. During a median follow-up of 443 days (IQR 220-791), 21 patients (27%) experienced a treatment failure including 12 persistence of the initial pathogen (57%) and 9 superinfections (43%).



An ASA score >2 (HR 2.8; 95%CI 1.26-6.15), the use of RMP (HR 0.4; 95% CI 0.17-0.95) and the duration of RMP treatment (HR 0.83; 95%CI 0.75-0.92 per week of treatment) were significant determinants of the outcome (but not methicillin-resistance). Receiving >2 weeks of RMP prevented the failure, but an introduction during the first 2 weeks did not influence the outcome.

Conclusions

In patients with staphylococcal acute PJI, the use of RMP and its duration strongly influenced the prognosis. As 25% of patients could not receive RMP, new drugs with anti-biofilm activity are required.

IPASTAPH Study Group