Debridement, antibiotics, and implant retention (DAIR) followed by suppressive antimicrobial therapy (SAT) is a useful strategy in patients with biofilm-associated prosthetic joint infection (PJI) for whom prosthesis removal is not desirable

C. Maci[1], S. Roux[2], C. Dupieux-Chabert[2], S. Lustig[2], J. Boulant[2], G. Delfosse[2], F. Valour[2], F. Ader[2], E. Braun[2], G. Henry[2], S. Goutelle[2], A. Schmidt[2], C. Batailler[2], C. Tassan Din[3], M. Ripa[1, 3], A. Castagna[1, 3], T. Ferry[2].

[1]Vita- Salute San Raffaele University - Milan (Italy), [2]CHU Lyon - Lyon (France), [3]IRCCS San Raffaele Hospital - Milan (Italy)

Background

Iterative revision in patients with PJI is associated with: (i) a potential loss of function; and (ii) a high mortality rate (>15%), especially in vulnerable patients. The combination of DAIR followed by SAT is sometimes discussed as a conservative approach for patients with biofilm-associated PJI for whom prosthesis removal is not desirable, but evidence on its long-term efficacy remains limited, especially in patients with fistula at baseline.

Methods

We identified patients with PJI managed by DAIR+SAT from the prospective Lyon BJI Cohort Study (NCT02817711). We retrospectively collected data to investigate long-term outcome. Data management and statistical analysis were performed using Python. Survival of good outcome at 24 months was assessed and impact of fistula was analyzed.

Patient characteristics at baseline	n (%)
Male	65/125 (52%)
Post-operative infection	85/125 (68%)
symptoms started >4 weeks after a previous surgery	99/125 (80%)
Sinus tract	52/ 125 (42%)

Table 1. Characteristics at baseline of the 125 patients managed by DAIR+SAT at Croix-Rousse Hospital (CRIOAc Lyon; Hospices Civils de Lyon).

Results

125 patients were included (Table 1). The microorganisms involved were summarized in Figure 1. Open DAIR (arthrotomy) was performed in 84.8% (others had arthroscopic DAIR). SAT was initiated after a mean of 87 days of primary antimicrobial therapy; followed by oral SAT, mostly doxycycline (33.6%). Discontinuation of SAT for drug adverse events occurred in 26%. Overall, 65.6% of the patients achieved a good outcome with a median follow-up of 2 years (IC95% 59–76). Relapse occurred in 20.8%, a new PJIs in 13.6%. 35.2% of cases required a new surgical procedure including new DAIR, for a new PJI or for a relapse, and amputation was done in 5% of the patients. Mortality was 4.8% (33.3% infection-related). Finally, fistula at baseline was not significantly associated with failure (OR 2.13, 95% CI 0.78–5.88; good outcome in patients with/without fistula were 50% vs. 68%)(Figure 2.).

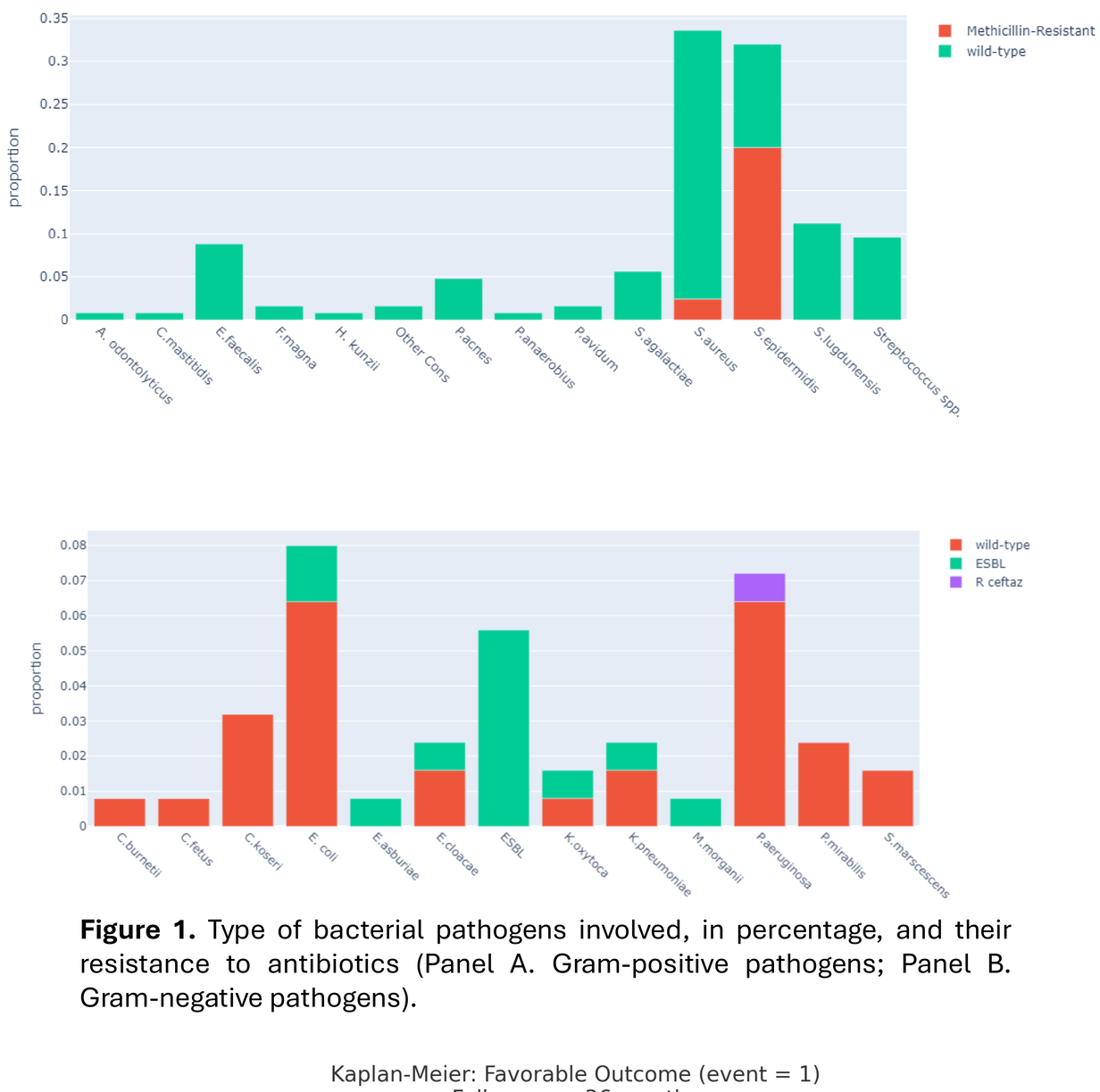

Figure 1. Type of bacterial pathogens involved, in percentage, and their resistance to antibiotics (Panel A. Gram-positive pathogens; Panel B. Gram-negative pathogens).

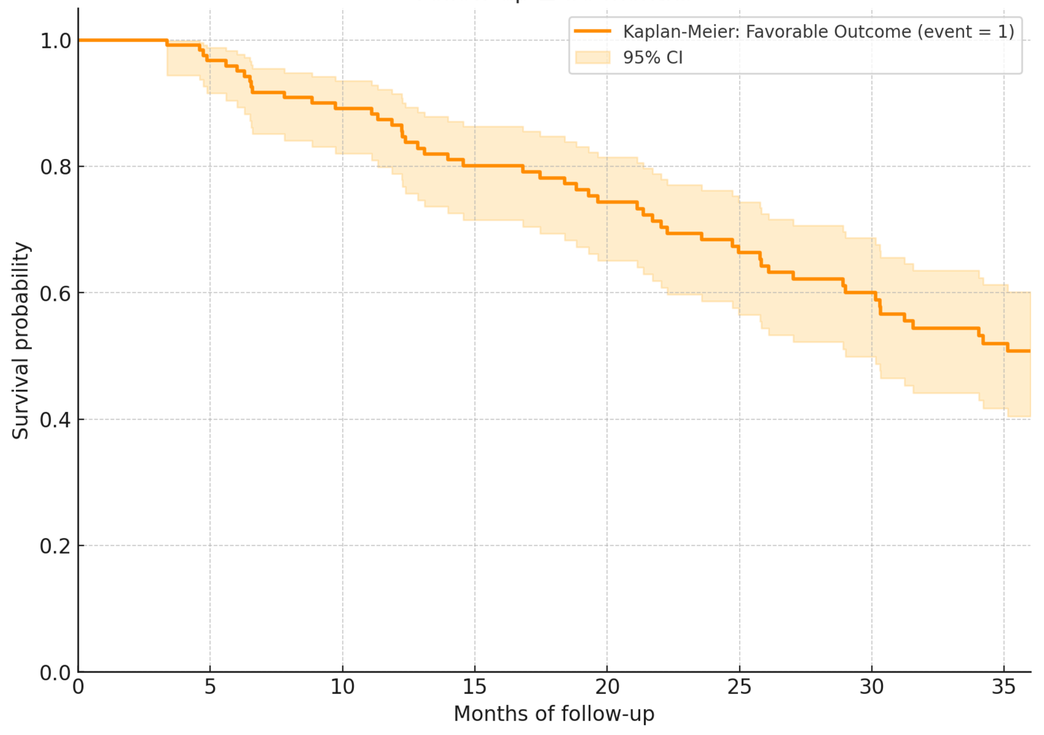

Figure 2. Kaplan–Meier survival curve for good outcome following DAIR with SAT after 36 months .

Conclusions

In patients managed by DAIR+SAT with a primary antimicrobial therapy during about 3-month, fistula at baseline seemed not to be strong predictor for failure. The majority of the benefited from sustained infection control during a prolonged follow-up, with a low mortality rate. DAIR+SAT, is a useful strategy to control the disease and to limit mortality in patients with biofilm-associated PJI for whom prosthesis removal is not desirable.

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