Management of *P. acnes* bone and joint infection in a regional reference centre in France

C. Chassin, F. Valour, J. Saison, M.H. Fessy, F. Laurent, F. Ader, S. Lustig, C. Chidiac, T. Ferry on behalf of the Lyon BJI Study group

Hospices Civils de Lyon, France, Université Claude Bernard 1 Lyon, France, Centre International de Recherche en Infectiologie, CIRI, Inserm U1111, CNRS UMR5308, ENS de Lyon, UCBL1, Lyon, France

Introduction

Despite *P. acnes* is a frequent pathogen involved in bone and joint infection (BJI), few data are available in the literature on *P. acnes* BJI management and outcome.

Materiel and methods

We performed a retrospective cohort study (2007-2013) including adult patients presenting postoperative monomicrobial *P. acnes* BJI (at least 2 peroperative samples were required for the diagnosis) in a regional reference center in France. Clinical data were collected and determinants for treatment success were determined using univariate Cox analysis.

Results

Forty-one patients were included during the period (figure 1). Clinical characteristics are detailed in the table 1.

Figure 1. Flow chart and outcomes of the 41 patients with *P. acnes* infection
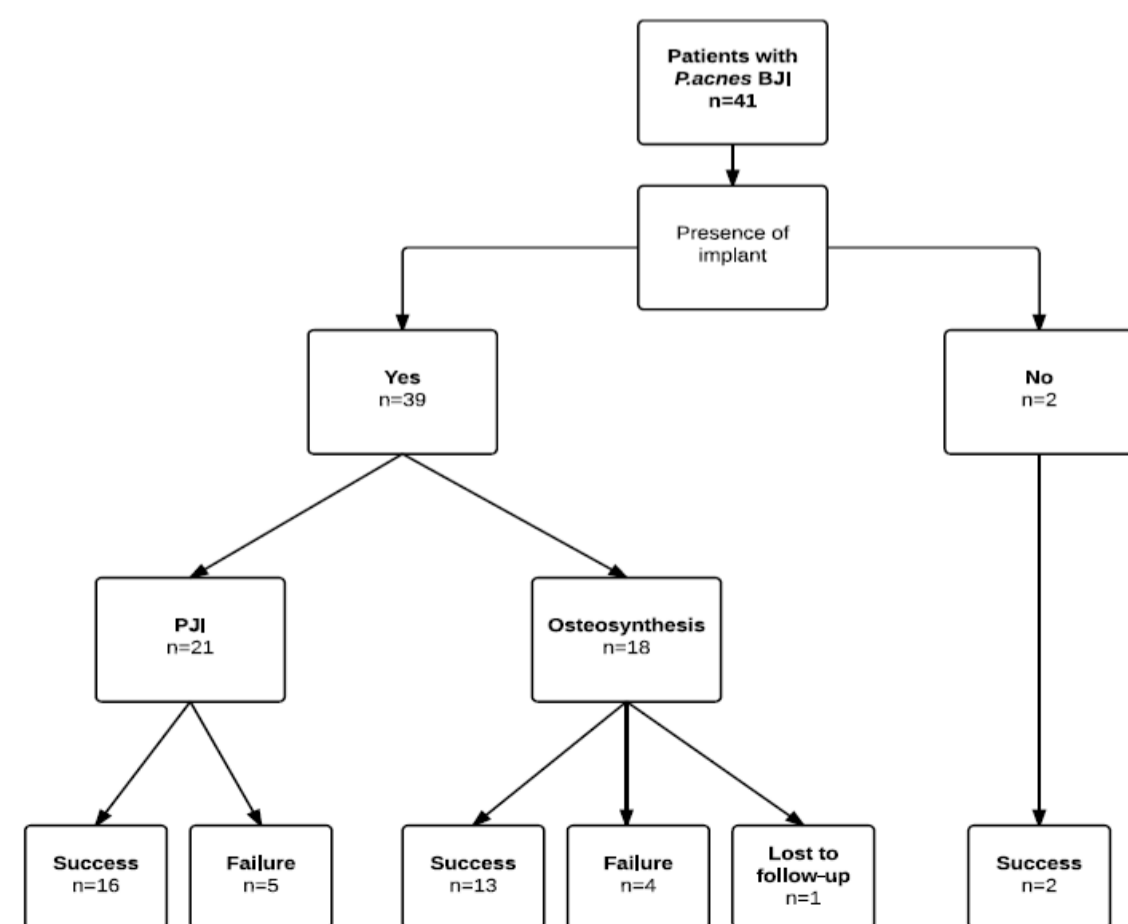
	Success (n=31)	Failure (n=9)	Total (n=40)	p
Symptoms:				
Fever	5 (16.1%)	2 (22.2%)	7 (17.5%)	NS
Pain	30 (96.8%)	9 (100%)	39 (97.5%)	NS
Local inflammation	18 (58.1%)	7 (77.8%)	25 (62.5%)	NS
Sinus tract	5 (16.1%)	4 (44.4%)	9 (22.5%)	NS
Abscess	11 (35.5%)	4 (44.4%)	15 (37.5%)	NS
CRP max (mg/L), mean	104	88	100	NS
No of positive intraoperative samples, mean	3.6 (±0.40)	4 (±0.57)	3.6 (±0.3)	NS
No of intraoperative samples, mean	4.9 (±0.36)	5 (±0.62)	4.9 (±0.3)	NS
Infection classification:				
Acute (<1month)	3 (9.7%)	0	3 (7.5%)	NS
Subacute (1-3months)	4 (12.9%)	3 (33.3%)	7 (17.5%)	NS
Delayed (3-12months)	14 (45.2%)	6 (66.7%)	20 (50%)	NS
Late (>12months)	10 (32.3%)	0	10 (25%)	NS
BJI> 3months	24 (77.4%)	6 (66.7%)	30 (75%)	NS

Comparisons between groups were not significant.

Table 2. Characteristics of the 40 patients (1 patient lost to follow-up was excluded)

Using univariate Cox analysis and Kaplan Meier curves, we found as determinants for treatment success the two following factors: optimal surgical treatment (HR 0.260; CI95% 0.070-0.974; p=0.046; figure 2) and the prescription of immediate empirical antimicrobial therapy (HR 0.101; CI95% 0.019-0.525; p=0.006) (figure 3). No other between group differences were observed.
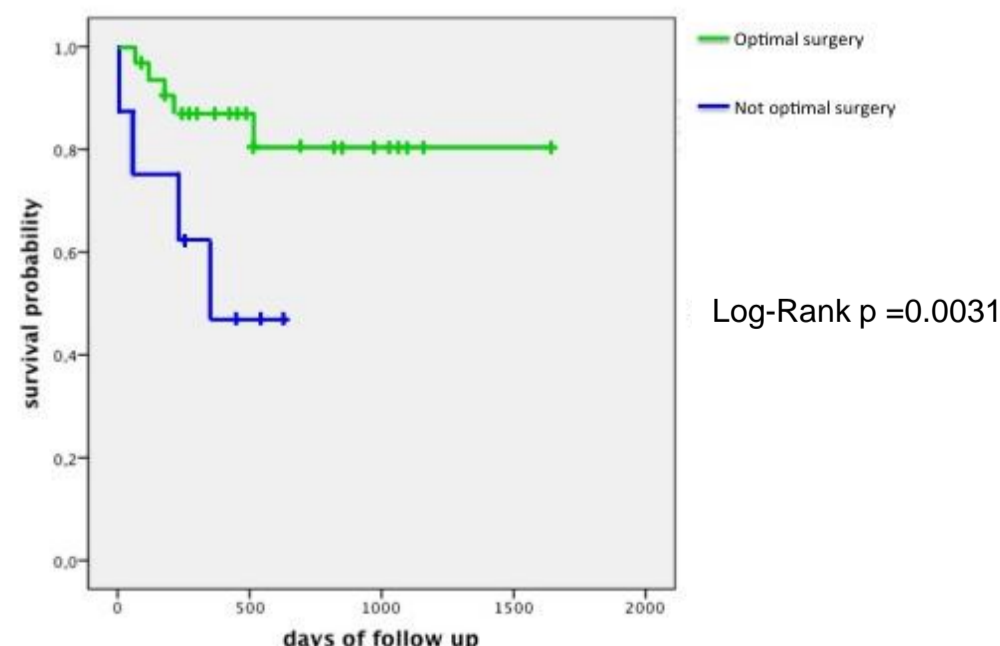

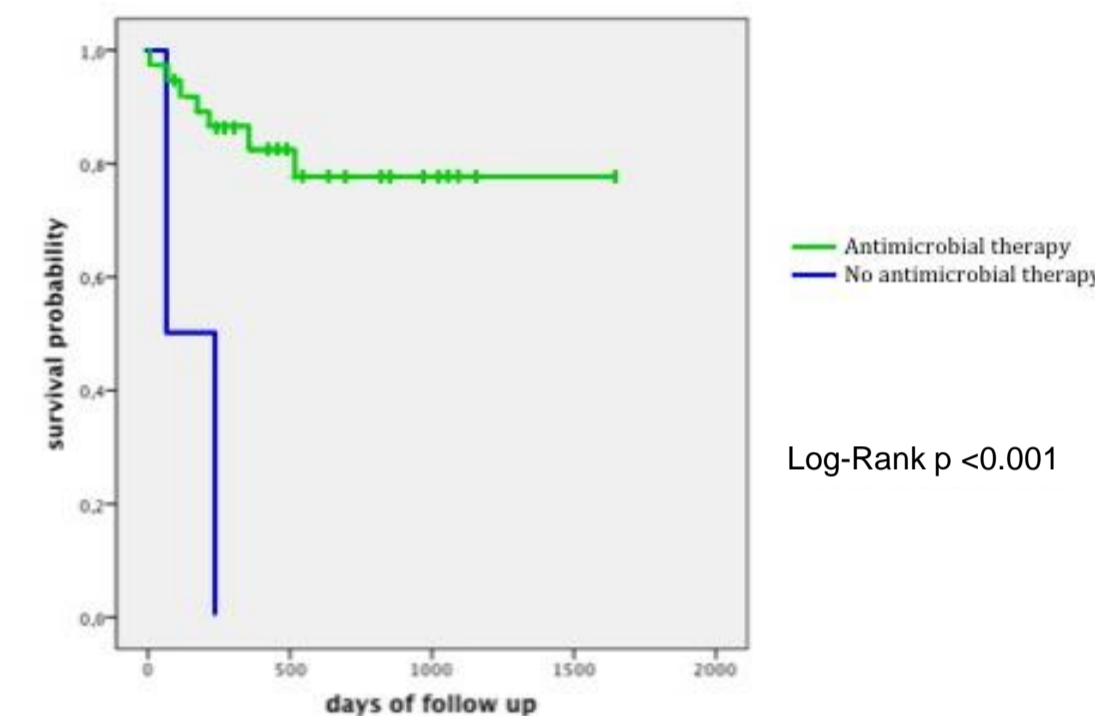**Figure 2.** Kaplan Meier survival curves for patients for who optimal or nondoptimal surgery

Figure 3. Kaplan Meier curves for patients receiving or not an immediate post operative antimicrobial therapy

Conclusion

P. acnes is mainly responsible for late implant-associated BJI. Prescription of immediate post-operative antimicrobial therapy seems to influence the outcome. As *P. acnes* is usually not considered as virulent as other pathogen such as staphylococci, the surgical strategy is often conservative, leading to treatment failure. Chronic implant-associated *P. acnes* BJI required aggressive surgical management that facilitate the cure and could help to reduce the duration of antibiotic therapy.

Lyon BJI Study group