Unresolved Issues in Candida Prosthetic Joint Infection

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- **Introduction and Aim:** Candida periprosthetic joint infection (PJI) is usually treated with joint removal, but clinical characteristics, surgical management, duration of antifungal therapy vary. We aimed to analyze clinical, microbiological and surgical characteristics of patients diagnosed with Candida PJI of hip or knee.
- **Methods**: Retrospective study of adults admitted 2017-2024 with Candida PJI of hips and knees. Patients were identified using ICD-10 codes and cross-referenced with candida cultures from a microbiology database. Charts were reviewed for comorbidities, prior bacterial PJI, prior surgeries, bacterial coinfection, antifungal regimen and surgical management. Outcomes were assessed through 2-year follow-up. Failure defined as recurrent infection requiring additional surgery, amputation or death. Patients were stratified based on isolation of Candida before planned PJI surgery or from operative cultures.

Results: 29 patients met inclusion criteria, median 63 years [IQR 58–71]; 13 (44.8%) male, 15 (51.7%) knee PJI, 19 prior bacterial PJI (65.5%) and 15 bacterial coinfection (51.7%), median 3 prior surgeries [IQR 2–6] before fungal PJI diagnosis. *C. albicans* most common isolate, seen in 18 (62.1%) using bacterial and fungal cultures. No patient had fungemia. Surgery involved spacer placement in 19 (67.9%) and DAIR in 6 (21.4%). Most received fluconazole alone, 25/29 (86.2%) with median antifungal duration of 203 days [IQR 150–300]. Candidal infection identified before planned PJI surgery in 11 (37.9%) and intraoperatively in 18 (62.1%); those diagnosed before surgery were younger, with median age 58 vs. 66.5 years (p=0.03) with higher prior surgical burden; median 6 vs. 2.5 prior surgeries (p=0.05). Despite prolonged therapy, outcomes were poor, with treatment failure in 13 (44.8%) including death in 4 (31%) without difference between groups. (Table 1)

Conclusion: Our patients with candida PJI had multiple prior surgeries and candidal infection often not suspected preoperatively. Bacterial coinfection was common and approach to treatment was variable. Preoperative diagnosis did not impact outcome. More studies are needed to improve diagnosis and treatment.

Characteristic	Candida known before PJI surgery (n=11)	Candida not known before PJI surgery (n=18)	All Patients (n=29)	P Value
Age years (mean ± IQ)	58 (51-64)	66.5 (60-73)	63 (58-71)	0.03
Female, n (%) Male	5 (45.5) 6 (54.5)	11 (61.1) 7 (38.9)	16 (55) 13 (45)	0.4
BMI (median, IQR)	30 (27.9-41.4)	31 (27-39.9)	30 (27-39.9)	0.8
Hip	6 (54.5)	8 (44.4)	14 (48.3)	
Knee	5 (45.5)	10 (55.6)	15 (51.7)	
Prior PJI	9 (81.8)	10 (55.6)	19 (65.5)	0.1
Surgeries before Candida PJI n, (min-max)	6 (2-6)	2.5 (2-4)	3 (2-6)	0.05
Bacterial coinfection with candida, n (%)	5 (45.5)	10 (55.6)	15 (52)	0.6
Blood culture done, n (%)	4 (36.4)	11 (61.1)	15 (52)	0.2
PJI diagnosis, n (%)				0.9
acute < 3weeks	2 (18.2)	3 (16.7)	5 (17.2)	
Type of Candida n (%)				0.5
C albicans	6 (55.)	11 (61)	17 (59)	
C parapsilosis	3 (27)	7 (39)	10 (35)	0.5
Candida glabrata	1 (9)	0	1 (3)	
Candida dubliniensis	1 (9)	0	1 (3)	
Surgical treatment for PJI, n (%)				0.3
Spacer	10 (91)	9 (50)	19 (66)	
DAIR	1 (9)	7 (39)	8 (28)	
I&D Revision arthroplasty	0 0	1(5.5) 1 (5.5)	1 (3) 1 (3)	
Duration antifungal therapy, n, (min-max)	272 (200-480)	180 (75-223.5)		0.01
Outcome n (%)				0.5
Failure	4 (36.4)	9 (50)	13 (45)	
Death related to PJI	1 (25)	3 (33.5)	4 (31)	
Amputation	0	1 (11)	1 (7.5)	
Persistent/recurrence candida	2 (50)	1 (11)	3 (23)	
Bacterial infection	1 (25)	3 (33.5)	4 (31)	
Surgery related to PJI	0	1 (11)	1 (7.5)	

*Data are presented as mean ± standard deviation or n (%), unless otherwise indicated. P values were calculated using chi-square or Fisher exact test for categorical variables and Wilcoxon rank-sum test for continuous variables. Abbreviations: PJI (periprosthetic joint infection); DAIR (debridement, antibiotics, and implant retention); COPD, (chronic obstructive pulmonary disease); BMI (body mass index).[a].congenital n =2 Candida known before PJI surgery, and trauma n =3, avascular necrosis n =3 Candida not known before PJI surgery.

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