

Candida bursitis: Systematic Analysis of Mechanisms, Manifestations, Microbiology, Treatment, and Outcome

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Background

• *Candida* bursitis is a painful and debilitating osteoarticular mycosis. While there have been recent advances in our understanding of other osteoarticular mycoses [1-3], little is known about *Candida* bursitis.

• As part of a comprehensive analysis of osteoarticular mycoses, the International Consortium for Study of Osteoarticular Mycoses undertook a systemic review of the underlying mechanisms, clinical presentation, possible risk factors, medical therapy, and surgical intervention, and response to therapy of *Candida* bursitis.

Methods

➤ **Study Design:** Review of reported cases of *Candida* bursitis as published in the English literature. Study period 1967-2014.

➤ **Study population:** Well-described cases of *Candida* bursitis.

✓ Accordingly to the following mechanisms:

• **Direct inoculation:** Seeding of the bursal tissue/ fluid by trauma or surgical manipulation.

• **Hematogenous:** Seeding of the bursal tissue/ fluid by bloodborne route.

• **Contiguous:** Seeding of the bursal tissue/fluid from an adjacent *Candida* infection.

• **Candida bursitis:** All patients with the evidence of a positive culture, and/or histology from bursal tissue/fluid.

• **Complete response:** Complete resolution of clinical findings of *Candida* bursitis.

• **Partial response:** Partial resolution of clinical, findings of bursitis.

➤ **Data Collection/Analysis:** Data regarding epidemiology, clinical and laboratory features, demographic characteristics, management, and outcome of the patients were collected and presented with descriptive statistics.

Results

➤ Eleven cases of *Candida* bursitis were identified.

➤ Median age was 65y (range, 32-77y) and 7 patients (64 %) were males.

➤ Key underlying conditions consisted of orthopedic joint injections with corticosteroids (45 %) and systemically administered corticosteroids (55 %).

➤ The most commonly infected sites were olecranon/elbow (45 %), shoulder (27 %), and acromioclavicular (18 %) bursae. Six (54 %) patients had concomitant *Candida* arthritis.

➤ Local symptoms and signs were marked by indolent onset of pain (73 %), edema (73 %), and erythema (45 %), while 18% of the patients presented with fever.

➤ Onset of symptoms ranged from weeks to months.

➤ Inflammatory biomarkers were also only mildly elevated: Peripheral WBC count was mostly within normal limits (7,540 (500 – 11,700)); ESR and CRP were moderately elevated: ESR: 79 (48 – 106) mm/hr; 5.4 (1.2 – 6.7) mg/L.

➤ Synovial fluid was more inflammatory with median WBC of 22,000 (11,400 – 15,700,000) and 80 % PMNs (55 – 98 %).

➤ All cases were successfully treated with an antifungal agent (mainly fluconazole or amphotericin B) and surgery (mainly drainage/aspirations or debridement followed by bursectomy).

References

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Table 1: Demographics & possible risk factors for *Candida* bursitis

Demographics/ Risk factors	No (%)
Median age (32-77y)	65y
Adults (≥19 y)	11 (100)
Gender	
Males	7 (64)
Underlying conditions	
Solid tumors	2 (18)
Hematologic malignancy	1 (9)
Surgery:	
Orthopedic / (corticosteroids) joint injections	5 (45)
Prior broad spectrum antibiotics	3 (27)
Prior antifungal agents	2 (18)
Open fracture	0 (0)
Trauma/open wound	2 (18)
Neutropenia	0 (0)
Corticosteroids	6 (55)
Pharmacological immunosuppression other than steroids	2 (18)
Diabetes mellitus	1 (9)
Rheumatoid arthritis	1 (9)
SLE	2 (18)
Immunocompetent	2 (18)

Serum	
WBC (/mm ³)	7,540 (500 – 11,700)
PMNs (%)	56 (15 – 56)
ESR (mm/h)	79 (48 – 106)
CRP (mg/dl)	5.4 (1.2 – 6.7)
Hgb (g/dl)	13.5 (9.8 – 14.7)

Bursal / Synovial Fluid*	
Gram stain	3 (27 %) (+)
Culture	11 (100 %) (+)
WBC (/mm ³)	22,000 (11,400 – 15,700,000)
PMNs (%)	80 (55 – 98)

* The color ranged from red, white, to yellowish; it may be cloudy, purulent or viscous

Table 3: Microbiology

Microbiological Data	
<i>Candida</i> spp.	11 (100 %)
	5 <i>C. parapsilosis</i> (45.5 %)
	2 <i>C. albicans</i> (18.2 %)
	2 <i>C. tropicalis</i> (18.2 %)
	1 <i>C. glabrata</i> (9.1 %)
	1 <i>C. lusitanae</i> (9.1 %)

Table 4: Inflammatory markers of *Candida* bursitis

Clinical Manifestations	
	No (%)
Local symptoms	
Pain/ Tenderness	8 (73)
Edema	8 (73)
Erythema	5 (45)
Limitation of function/ movement	3 (27)
Fever	2 (18)
Draining pus/ sinus tract	0 (0)

Table 2: Clinical Manifestations

Medical Treatment ^a	
	N (%)
Only Antifungal Agents	2 (18)
Only Surgery	0 (0)
Antifungal Agents and Surgery	9 (81)

Class of Antifungal Agent(s) used	
Polyenes	4 (36)
Azoles	7 (64)
Flucytosine	1 (9)
Echinocandin	1 (9)
Combination ^b	1 (9)

Duration of Medical Treatment ^b	
Median Duration in days (range 14-70)	70 d

Surgical Intervention	
Debridement	6 (55)
Drainage/ aspiration	7 (64)
Irrigation/ lavage	3 (27)
Bursectomy	4 (36)
Insertion of fixation/ arthrodesis	1 (9)

Outcome	
Complete response	7 (64)
Partial response	3 (27)
Relapse	5 (45)
Death	1 (9)

^a One case of combination antifungal therapy consisted of azole-flucytosine

^b Two cases of unknown duration

Table 5: Treatment and Outcome

Conclusions

✓ *Candida* bursitis affects orthopedic joint injections with corticosteroids (45%) and systemically administered corticosteroids.

✓ Localizing symptoms and signs of pain, edema, and erythema are usually indolent and develop insidiously; fever was uncommon.

✓ Most commonly infected sites were olecranon and shoulder bursae.

✓ *C. parapsilosis* was the most frequently recovered species.

✓ Successful management of *Candida* bursitis in most cases was achieved with antifungal therapy and surgical drainage or bursectomy.



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