

***Candida glabrata* Olecranon Bursitis Treated With Bursectomy and Intravenous Caspofungin**

John G. Skedros, MD¹; Kendra E. Keenan, BS¹; and Joel D. Trachtenberg, MD²

Orthopedic surgeons are becoming more involved in the care of patients with septic arthritis and bursitis caused by yeast species. This case report involves a middle-aged immunocompromised female who developed a Candida glabrata septic olecranon bursitis that developed after she received a corticosteroid injection in the olecranon bursa for presumed aseptic bursitis. Candida (Torulopsis) glabrata is the second most frequently isolated Candida species from the bloodstream in the United States. Increased use of fluconazole and other azole antifungal agents as a prophylactic treatment for recurrent Candida albicans infections in immunocompromised individuals is one reason why there appears to be increased resistance of C. glabrata and other nonalbicans Candida (NAC) species to fluconazole. In this patient, this infection was treated with surgery (bursectomy) and intravenous caspofungin, an echinocandin. This rare infectious etiology coupled with this intravenous antifungal treatment makes this case novel among cases of olecranon bursitis caused by yeasts. (Journal of Surgical Orthopaedic Advances 22(2):179–182, 2013)

Key words: bursectomy, *Candida glabrata*, caspofungin, elbow, olecranon bursitis

Infections caused by *Candida albicans* and other *Candida* species are the fourth most common cause of nosocomial bloodstream infections, with a growing percentage of these cases being caused by nonalbicans *Candida* (NAC) species (1–3). *Candida (Torulopsis) glabrata* is now the second most frequently isolated *Candida* species from the bloodstream in the United States (4). The increased use of fluconazole and other azole antifungal agents as a prophylactic treatment for recurrent *C. albicans* infections in immunocompromised individuals is one reason why there appears to be an increased resistance of *C. glabrata* and other NAC species to fluconazole (5). For these NAC infections, this limits pharmacologic treatment to other

antifungal drugs, such as amphotericin B and echinocandins (6).

The hematogenous spread of NAC species has increased from 10% to 40% of cases from the 1970s to 1980s to 35% to 65% of cases from the 1990s (7). This explains the increased incidence of NAC bursitis and arthritis (8, 9). Surgical methods are commonly used in combination with antifungal pharmacological treatments to eradicate these infections (10). The services of orthopedic surgeons and physicians are therefore becoming more integral in the treatment of septic arthritis and bursitis caused by yeast species (11).

Our literature review located only four cases of *Candida* olecranon bursitis. These occurred in immunocompromised patients and were caused by *C. tropicalis*, *C. lusitanae*, and *C. parapsilosis* (two cases) (Table 1). This report describes a case of olecranon bursitis that was caused by *C. glabrata*, which, to our knowledge, has not been described as the infectious agent in olecranon bursitis. The patient described in this report is a middle-aged immunocompromised female who developed this infection after a corticosteroid injection in the olecranon bursa for presumed aseptic bursitis. The *C. glabrata* olecranon bursitis that developed was treated with surgery (bursectomy) and intravenous (IV) caspofungin. This rare infectious etiology coupled with this IV antifungal treatment makes this case novel even among the cases of olecranon bursitis caused by yeasts.

From ¹Utah Orthopedic Specialists and Intermountain Medical Center, Salt Lake City, Utah; ²Salt Lake Infectious Diseases, Salt Lake City, Utah. Address correspondence to: John G. Skedros, MD, Utah Orthopedic Specialists, 5323 South Woodrow Street, Suite 200, Salt Lake City, UT 84107; e-mail: jskedrosmd@uosmd.com.

The authors have obtained the patient's informed written consent for print and electronic publication of this case report. The authors have no conflicts of interest in either a financial capacity or other capacity that would bias this work.

Received for publication December 27, 2011; revision received March 9, 2012; accepted for publication May 17, 2012.

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1548-825X/13/2202-0179\$22.00/0

DOI: 10.3113/JSOA.2013.0179

TABLE 1 Cases of reported *Candida olecranon bursitis*

Author/Date	Age/Sex	Underlying Disease	Organism	Pharmacologic Treatment	Surgical Treatment	Outcome
Present Study, 2013	63/Female	Chronic emphysema/bronchitis, COPD, HypoT4, recurrent OPC	<i>C. glabrata</i>	Casposfungin	Bursectomy	Cure
Murray et al., 1976 (44)	77/Male	Cardiomegaly, HypoT4, bladder cancer, syphilis	<i>C. tropicalis</i>	Amphotericin B	Bursectomy	Cure
Schlesinger and Hoffman, 1995 (43)	62/Female	Chronic emphysema, COPD, breast cancer, HypoT4, seizure disorder	<i>C. parapsilosis</i>	Amphotericin B, ketoconazole	None	Cure
Behar and Chertow, 1998 (41)	59/Female	Asthma, CAD, IDDM, SLE, cardiac arrest	<i>C. lusitaniae</i>	Fluconazole, flucytosine	None	Infection recurred
Jiménez-Palop et al., 2002 (42)	32/Male	None	<i>C. parapsilosis</i>	Fluconazole	Bursectomy	Cure

CAD, coronary artery disease; COPD, chronic obstructive pulmonary disorder; HypoT4, hypothyroidism; IDDM, insulin-dependent diabetes mellitus; OPC, oropharyngeal candidiasis; SLE, systemic lupus erythematosus.

Case Report

A right-hand-dominant 63-year-old Caucasian female (160 cm, 45 kg, body mass index 17.5) presented to her primary care physician with a chief complaint of right elbow pain and swelling (posterior aspect) 2 weeks after “bumping” her elbow on a blunt object. She was diagnosed as having aseptic olecranon bursitis. Synovial-like fluid was aspirated and a corticosteroid was injected into the bursa. Over the ensuing 2 weeks, erythema developed over the olecranon and the swelling worsened. The erythema was not ascending and she did not have tactile fevers. Two weeks later (1 month after bumping her elbow) she presented to our clinic with swelling, erythema, and pain over the posterior aspect of her right elbow.

She was taking prednisone (10 mg) daily for chronic obstructive pulmonary disease (COPD) as well as doxycycline monohydrate 150 mg orally twice a day, three times per week to suppress recurrences of bacterial bronchitis. For approximately 2 years, she was repeatedly treated for oropharyngeal candidiasis (thrush) with 10 mg of clotrimazole orally five times per day. She required oxygen by nasal cannulae at 3 L/min for COPD. Her other medications included corticosteroid inhalers, levothyroxine (for hypothyroidism), amlodipine (for hypertension), and estrogen replacement therapy. She did not use illicit drugs and had stopped smoking cigarettes 20 years previously. She reported drinking one or two alcoholic beverages per week.

Examination in our clinic showed subtle erythema extending 2 to 3 cm beyond the margin of a painful and swollen olecranon bursa. Fluctuance of the bursa

suggested the presence of an effusion. An attempt was made to aspirate fluid from the olecranon bursa with an 18-gauge needle, but none could be obtained. Treatment was an open irrigation and debridement (I & D) with bursectomy, which was done the following day. At surgery, a whitish semisolid nonpurulent (phlegmon-like) material was found, which filled the olecranon bursa. The wound was left open for daily dressing changes and then was closed over a drain a few days later (after a second I & D). Initial IV antibiotic treatment was empirical (ertapenem 1.0 g IV once daily) until cultures obtained from the center of the phlegmon-like material grew *Candida glabrata* 5 days later. This was resistant to fluconazole. After consultation with an infectious disease specialist, a 3-week course of IV casposfungin acetate was then started (70 mg IV as an initial dose and then 50 mg IV daily). During this time the patient continued to take doxycycline monohydrate on her regular three times per week schedule.

After wound closure, there were three occurrences of partial wound dehiscence that were attributed to compromised healing capacity. These occurred even though the patient’s elbow was splinted for 3 weeks after the initial wound closure. The dehiscences were treated in the clinic with lavage of the bursa, removal of the dehisced skin margins with a scalpel, and subsequent closure with suture. After the final (third) partial dehiscence, a cylinder cast was applied to restrict elbow motion, with the initial flexion angle of 20°. The cast was changed every 2 to 3 weeks and the flexion angle was increased by 15° each time until 100° of flexion was reached. The total casting period after this final debridement was 10 weeks. This was followed by 2 weeks with a removable posterior splint. At

final follow-up at 36 months after the final surgery, the patient had no recurrence of infection and she was satisfied with her final result.

Discussion

This is one of the few reported cases of olecranon bursitis caused by a *Candida* species and is the first that we are aware of that describes olecranon bursitis caused by *C. glabrata*. As in this patient, the generally increased prevalence of these NAC infections is likely the consequence of the increased use of azole antifungals for more common infections such as vaginal yeast or oral thrush, which are typically caused by *C. albicans* (12–14). In a study of *C. glabrata* resistance (15), 68% of 25 *C. glabrata* isolates were resistant to fluconazole and, of those, 88% were resistant to clotrimazole, which is what our patient took for ~2 years before beginning doxycycline monohydrate). Guidelines recommended by the Infectious Diseases Society of America (IDSA) for bone or joint *Candida* infections include surgical debridement and an initial course of amphotericin B for 2 to 3 weeks, followed by fluconazole for a duration of 6 to 12 months (16). However, because of increasing resistance of *C. glabrata* strains to fluconazole, echinocandins (i.e., caspofungin) have become the preferred treatment for infections caused by this species (17).

The genus *Candida* comprises more than 100 species (14, 18) of which *C. albicans* is the most common isolate from yeast infections (19–21). Although our literature search did not reveal any cases of olecranon bursitis in which *C. albicans* was isolated from the olecranon bursa, it does remain the most frequent *Candida* pathogen in the United States and globally (~45%) (1, 19). *C. glabrata* is a less common pathogen and accounts for approximately 18% to 23% of isolates (19, 22, 23).

C. glabrata is most commonly manifested as the fungal infectious agent in urinary tract infections and vaginitis and in immunosuppressed patients who have had marrow and organ transplantations, as well as following chemotherapy for cancer (3, 24). Intravenous drug use is also a risk factor for *Candida* infections including *C. glabrata* (25). There are a few reported cases of *C. glabrata* arthritis (12, 26) and *C. glabrata*-infected joint endoprostheses (27–31). Other musculoskeletal infections involving localized *C. glabrata* include osteomyelitis, spondylitis, and spondylodiscitis (32–40).

Although we could not locate olecranon bursitis caused by *C. glabrata*, there are a few reports of olecranon bursitis caused by other NAC species (Table 1). Behar and Chertow (41) report a case of a 59-year-old woman with insulin-dependent diabetes who was also taking prednisone and methotrexate for asthma and developed *C. lusitanae* olecranon bursitis. Treatment was with

100 mg/day of fluconazole and repeated aspirations. When it was determined that the species of yeast was resistant to fluconazole, treatment was changed to flucytosine for 8 weeks (no bursectomy was done). This appeared to initially eradicate the infection; however, the *C. lusitanae* olecranon bursitis returned and the patient died from *Pneumocystis carinii* pneumonia 7 months after this recurrence.

Jimenez-Palop et al. (42) describe a case of *C. parapsilosis* olecranon bursitis in what was believed to be an otherwise healthy 32-year-old male. He had a negative screening for human immunodeficiency virus. Treatment was with bursectomy and oral fluconazole. Schlesinger and Hoffman (43) also report a case of olecranon bursitis caused by a *C. parapsilosis* in a 62-year-old female with chronic emphysema. She had a medical history of breast carcinoma in addition to hypothyroidism and a seizure disorder. For this infection, she was treated successfully with amphotericin B and oral ketoconazole (no bursectomy was done).

In summary, our patient is an immunocompromised female who developed *C. glabrata* olecranon bursitis after probable inoculation from a corticosteroid injection into the olecranon bursa for aseptic bursitis. She likely had developed skin colonization with this NAC organism as a result of the prior chronic use of clotrimazole for recurrent thrush, caused by the more typical *C. albicans*. In addition to olecranon bursectomy, intravenous caspofungin was also used as an important adjunct in her treatment because the isolate was fluconazole resistant.

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