Infection of the Olecranon Bursa by Anthopsis deltoidea

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Anthopsis deltoidea was found to be the cause of an olecranon bursitis in a 79-year-old golfer. Serial histological sections of the olecranon bursa showed faintly stained, brown-walled, septate, hyphal elements in the centers of the necrotic debris. The combination of bursectomy and fluocytosine treatment cured the infection.

Anthopsis deltoidea is a rare dematiaceous soil hyphomycete. In 1974, Marchisio et al. (4) isolated the fungus for the first time from a horticultural bed in the botanical garden at the University of Turin in Italy. They described it as a new genus and species in 1977 (4). The fungus seems to be extremely rare, as it appeared in only one of 5,000 isolates made from the horticultural bed (4).

A. deltoidea has never been reported from clinical specimens as a contaminant or as an etiological agent. We report here a case of olecranon bursitis caused by A. deltoidea in a patient who was under low-dosage diethylstilbesterol therapy.

MATERIALS AND METHODS

A 79-year-old man noticed a painless swelling of the right elbow over a 3- to 4-month period in the summer of 1983. At this time the patient was taking low dosages of diethylstilbestrol as maintenance therapy for the prostatic carcinoma that had been diagnosed a few years previously. His family physician treated the right olecranon bursa with one injection of corticosteroid, but the swelling persisted. Subsequently, the patient was treated several times by a rheumatologist who aspirated the fluids from the bursa. Each aspirate appeared cloudy and grew a pure culture of a dematiaceous fungus. The patient was an avid golfer but denied any history of trauma to his right elbow.

In September 1983 the patient was admitted for olecranon bursectomy. The only significant finding revealed by preoperative examination was in his right olecranon bursa, which was swollen, fluctuant, nontender, and without erythema or drainage. No epiploic or axillary lymphadenopathy was found. The bursa was removed, and the patient was treated with fluocytosine, 150 mg/kg daily, for 2 weeks. Follow-up cultures of a small amount of the residual olecranon fluid were negative for any fungi or bacteria. The patient is free from any infection and is presently functioning well.

Pathological observations. The removed specimen was a fluctuant, golden-yellow cyst measuring 6 cm in diameter. The wall of the bursa was ca. 1 cm in thickness, and the inner lining was composed of shaggy, golden-yellow debris. A portion was submitted for bacterial and fungal culture, and multiple representative sections were prepared for histopathological study.

The wall of the cyst was characterized by a well-vascularized, thick, fibrous connective tissue. The inner lining of the wall revealed granulomas with epithelioid cells and a small number of multinucleate giant cells surrounding the pockets of polymorphonuclear leukocytes. The sections stained by periodic acid-Schiff and Gomori methenamine silver showed many deeply stained, branching, 2- to 3-μm-wide hyphae (Fig. 1A). The sections stained with hematoxylin and eosin showed faintly brown, highly septate hyphae within the centers of the granulomas (Fig. 1B).

MycoLOGY. The aspirates, drawn repeatedly before the bursectomy, grew pure cultures of an unusual dematiaceous fungus. No bacteria were isolated. Whereas the tissue cultured at the time of the bursectomy showed histological evidence of brown-walled hyphae, the cultures were sterile. The fungus isolated from the aspirate was incubated on malt extract and Czapek solution agars at 30 and 37°C for 3 weeks. The fungus failed to grow at 37°C, but it grew slowly at 30°C on both media. On Czapek agar, the colony was restricted in growth (1.7 cm in diameter), flat with a few radial grooves, and nearly black, and the aerial hyphae formations were limited to the center (Fig. 2A). The colony on malt extract agar at 30°C reached a diameter of 2 cm in 3 weeks. It was slightly raised at the center and dark oliv-gray with a velvety surface created by dense, short aerial hyphae (Fig. 2B). The colony reverse was black.

On a cornmeal agar slide culture, the hyphae were narrow (1.5 to 2 μm in width) and sinuous (Fig. 3A). Phialidic conidiogenous cells developed from the swollen, oval, elliptical to subglobose (Fig. 3B, C, and D) cells which were either terminal or intercalary on vegetative hyphae. The swollen hyphal cells, from which the ampullar phialides developed, were most commonly 3 by 6 μm when they were oval to elliptical in shape and 4 to 5 μm in diameter when they were subglobose. Phialides were oval (Fig. 3B, C, and D) in young culture but became ampullar (5 to 6 by 2 to 3 μm) in the old culture. The tip of the phialides did not show distinct collarettes in young cultures, but the collarettes were visible in some phialides in old cultures. The phialides appeared upside down since the conidiogenous locus and collarettes were at the base of the ampule near the point at which the phialides were produced on the swollen hyphal cells (2). Because of the dense growth of the phialides and conidia, it was difficult to discern the conidiogenous locus. The conidia (Fig. 2E) were olive colored, had an obtuse-triangle or diamond shape (2 to 3 μm), and were produced in a long column (Fig. 2C) or in mass (Fig. 2D). They were not readily dispersed on the mount.

RESULTS AND DISCUSSION

A. deltoidea, a rare soil fungus, is part of a group of dark-walled hyphomycetes that are capable of causing phaeohyphomycosis (1). A. deltoidea, however, differs from many usual agents of phaeohyphomycosis in that the tissue form is
morphologically uniform hyphae without distorted or swollen cells. Most of the tissue forms of the agents of phaeohyphomycosis have an admixture of regular or moniliform hyphae, swollen cells, and yeast-like cells in various combinations (3, 5). Except for the faintly brown wall and slightly narrower diameter, the hyphal morphology of A. deltoidea in tissue resembled those of Aspergillus sp. found in disseminated cases. The hyphae of A. deltoidea measured 2 to 3 μm in diameter compared with an average of 3 to 4 μm for the Aspergillus hyphae in tissue.

Our patient had a history of prostatic carcinoma and was receiving treatment with diethylstilbestrol. He was an avid golfer, and although he did not recall any history of trauma to his right elbow, the fungus may have penetrated the skin during a minor trauma that he does not recall. Since the fungus does not grow at 37°C, it is highly unlikely that the conidia might have been spread hematogenously to the bursa from the lung.

FIG. 1. A. deltoidea in sections of olecranon bursa tissue. (A) Gomori methenamine silver-stained section showing extensive hyphal growth. Magnification, ×500. (B) Faintly pigmented hyphae (see arrows) in the midst of polymorphonuclear leukocytes seen in hematoxylin- and eosin-stained section. Magnification, ×1,000.

FIG. 2. A. deltoidea in culture. (A and B) Three-week-old colonies on Czapek solution agar and malt extract agar, respectively. (C) Long column of spore chains produced in a cornmeal agar slide culture. Magnification, ×1,000. (D) Spore masses produced on cornmeal agar. Magnification ×1,000. (E) Triangular to diamond-shaped conidia. Magnification, ×1,000.
There has been only one report describing A. deltoidea isolation, yet the fungus grows well on simple media and is not readily confused with other fungi. We detected some differences between our isolate and the type culture description. The angles of the conidia were more rounded than those of the type culture. Unlike the type culture, a simple conidiogenous cell with apical collarette was not detected in our isolate. The conidiogenous cells in our isolate were usually without conspicuous collarettes. In repeated subcultures, the conidia became less triangular and more obtuse diamond in shape. The second species of Anthopsis, A. catenata, produces ellipsoid to subglobose conidia in chains (6). Anthopsis species are most unusual in that the conidiogenous locus is at the base rather than at the tip of the ampullar phialides. The conidial structures are well illustrated in the drawings of Carmichael et al. (2).

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LITERATURE CITED


