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NOTES

Paecilomyces lilacinus as the Cause of Chronic Maxillary Sinusitis

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Paecilomyces lilacinus was isolated on two separate occasions from the left antrum of a patient with chronic maxillary sinusitis. The clinical presentation and characteristics of the fungus and the sinus debris histopathology are discussed.

Paecilomyces lilacinus is a well-recognized saprophyte and contaminant in cultured clinical specimens. The fungus, however, is seldom pathogenic for humans. We report here a human case of maxillary sinusitis caused by *P. lilacinus*.

Case report. A 47-year-old female who had undergone a left antrostomy for chronic maxillary sinusitis was seen 6 years later at the Otolaryngology Service with the complaint of left-sided facial pain. The examination was normal except for a slight tenderness over the left maxillary sinus. Sinus X rays showed opacification of the left antrum without bony erosion. The patient was treated with erythromycin for 2 weeks without improvement clinically or radiographically. An antral tap at this time did not produce purulent material, and cultures of the wash were negative for bacteria. However, a fungus that closely resembled a *Paecilomyces* sp. grew on Sabouraud dextrose agar without cycloheximide after 1 week of incubation. In the mean time, the patient was placed on tetracycline and scheduled for a Caldwell-Luc procedure. At the time of operation, the antrum was filled with friable yellow material that was surrounded by thickened mucosa and had no purulent exudate. There was a small defect in the medial bony wall, supposedly in the previous naso-antrostomy area. The sinus was completely cleaned. The patient responded well postoperatively, with prompt resolution of pain. Later, *Paecilomyces* was isolated again from the debris.

The fungus grew well on Sabouraud dextrose agar without cycloheximide and developed a colony measuring 3 cm in diameter after 1 week of incubation at room temperature. Abundant aerial hyphae and conidia developed. Incubation at 37°C produced small moist colonies measuring 2 to 4 mm after 1 week. The colonies gradually became dry and developed aerial hyphae and conidia after 2 weeks of incubation. At room temperature the colony developed a grayish-violet tinge on top and a light crimson color on the reverse. Microscopically, the fungus had the typical features of *Paecilomyces*. Ovoid conidia (2 by 2.5 μm) were borne in long chains from phialides that were slightly pointed at the apex (Fig. 1). Criteria based on conidium size and colony color (3, 6) suggested two possible species: *Paecilomyces marquandii* (Massee) Hudges and *P. lilacinus* (Thom) Samson. The criteria of Samson (15) were subsequently used by D. T. Wicklow, Northern Regional Research Center, Peoria, Ill., to identify the fungus as *P. lilacinus*. The isolate has been deposited in the Agricul-

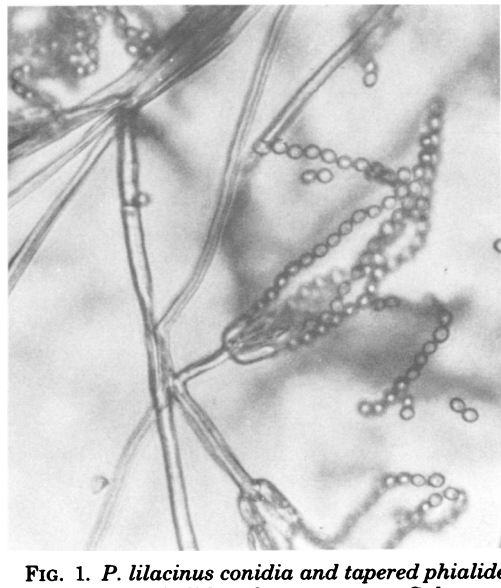

FIG. 1. *P. lilacinus conidia and tapered phialides from a 6-day-old slide culture grown on Sabouraud dextrose agar. Magnification ×450.*

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tural Research Culture Collection, Northern Regional Research Center, Peoria, Ill., as NRRL 6453.

Histological examination of the antral debris removed at surgery revealed the following. The specimen consisted of approximately 5 g of irregular, pale gray to red tissue fragments measuring up to 0.8 cm in their greatest dimension. Paraffin sections of Carson buffered Formalin-fixed tissue were stained with hematoxylin-eosin and periodic acid-Schiff stains. These sections showed a chronically inflamed respiratory mucosa and submucosa. The inflammatory infiltrate consisted of small, round lymphocytes admixed with plasma cells and an occasional eosinophile. Interspersed among, but separate from, these tissue fragments were multiple large, tangled fungal masses (Fig. 2). These masses consisted of broad, branched hyphae, twisted and knotted into irregular masses that were highly eosinophilic with hematoxylin-eosin stains and deep red with periodic acid-Schiff stains. Large, bulbous structures were identified on periodic acid-Schiff-stained sections. The fungus did not appear to invade the adjacent tissue. Necrotic debris was not noted.

The genus *Paecilomyces* was first described by Bainer (1) in 1907 from a single species, *Paecilomyces varioti*. This genus is closely related to *Penicillium*, *Verticillium*, and *Gliocladium* (2). Phialides that are swollen near the base but taper toward the apex and long chains of ovoid to elliptical conidia predominate the microscopic characteristics. Color, colony size, temperature response, and growth rate are highly variable among the species.

Various studies have shown that *Paecilomyces* spp. can either infect or parasitize silkworms, guinea pigs, nematodes, and other fungi and can destroy foodstuffs, wood, leather, paper, and textiles (4, 5, 8, 10, 13–16). Members of this genus are encountered most often in the clinical laboratory as common contaminants in cultured specimens.

Although an association of *Paecilomyces* spp. with sinusitis could not be found in the literature, one fatal case of postcardiac surgery endocarditis was reported from which *P. varioti* was isolated from blood cultures 3 weeks antemortem and from mitral valve thrombi and iliac artery emboli postmortem and was shown to produce pseudotuberculous lesions (18).

P. lilacinus has been shown to be the etiological agent causing endophthalmitis in 14 patients that received a lens implantation (9, 11, 12). The fungus was later isolated from presumed sterile

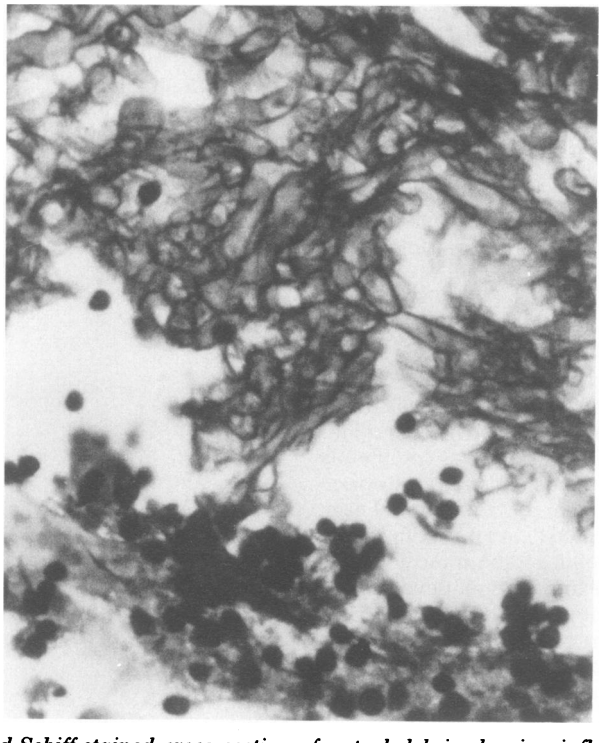

FIG. 2. *Periodic acid-Schiff-stained cross section of antral debris showing inflammatory response and adjacent mycelial elements. Magnification ×450.*

neutralizing solution used during the surgical procedure. Clinically, an initial inflammation was noted which later progressed to nodular iritis, keratitis, and exudative vitreal inflammation. The infection took 2 to 6 weeks to advance to the stage where six eyes had to be enucleated. Vision was impaired in the remainder. Antifungal sensitivity tests showed that the fungus was resistant to flucytosine and amphotericin B. Tabayasu et al. (17) described a case of cutaneous mycosis on the left cheek caused by *P. lilacinus*. The patient had erythematous plaques that had persisted for 15 years. Oral griseofulvin reduced the erythema and papules but did not totally eradicate the fungus after 2 months of treatment. A pleural effusion also has been caused by *P. lilacinus* (7).

This report has presented evidence that *P. lilacinus* can be pathogenic, producing an inflammatory response leading to maxillary sinusitis in an otherwise noncompromised host. Additionally, other case studies have shown that *P. varioti* and *P. lilacinus* can produce infections in humans. These findings should help to make medical and laboratory personnel more aware that members of this genus may well be pathogenic, albeit in rare instances.

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