Case Report

Sino-oral zygomycosis due to *Absidia corymbifera* in a patient with acute leukemia

**SHAFIULLA MOHAMMED**, T. P. SAHOO, R. S. JAYSHREE, P. P. BAPSY & SRIDHAR HEMA

Departments of *Microbiology* and †*Medical Oncology*, Kidwai Memorial Institute of Oncology, Bangalore, India

Fungi belonging to class Zygomycetes become pathogenic in certain predisposing conditions; principally diabetes mellitus, immunosuppression, trauma or burns. We report a case of a 31-year-old man with acute promyelocytic leukemia who developed infection of the sino-oral cavity, due to *Absidia corymbifera* during a neutropenic phase following induction chemotherapy. A provisional diagnosis of zygomycosis was made by demonstration of broad aseptate branching filamentous hyphae in the scrapings of the palate, which was subsequently confirmed as *A. corymbifera* by culture. Surgical debridement could not be done due to the thrombocytopenic status of the patient; instead antifungal therapy with amphotericin B was instituted. However, the patient succumbed to the infection after 15 days of its diagnosis. Although infections with *Absidia* are infrequent, this case highlights the need for its awareness as a potentially lethal opportunistic fungal infection that can present even with short duration of exposure to the usual risk factors.

**Keywords** *Absidia corymbifera*, leukemia, neutropenia, zygomycosis

---

**Introduction**

Human zygomycosis is an important but rare opportunistic fungal infection [1]. Widespread use of immunosuppressive therapy and broad-spectrum antibiotics probably play a contributory role in promoting fungal infection in these patients [1]. Early diagnosis, treatment of the underlying disease with prompt initiation of antifungal therapy and surgical debridement appear to improve prognosis. We report here a case of sino-oral zygomycosis in a patient with acute promyelocytic leukemia post chemotherapy, which was caused by *A. corymbifera*.

**Case report**

A 31-year-old man with no history of diabetes mellitus (random blood sugar: 97 mg/dl) presented with fever, bleeding gums and hemoptysis. A diagnosis of acute promyelocytic leukemia was established after appropriate investigations and he was started on induction chemotherapy with daunomycin (60 mg/m²) and all-trans retinoic acid (ATRA) (45 mg/m² per day). On the fourth day post chemotherapy, he developed febrile neutropenia [total leukocyte count (TLC): 1100/mm³, neutrophils: 200/mm³] and upper left molar toothache; for which he was given adequate antibiotic coverage for Gram-positive, Gram-negative and anaerobic bacterial infections. He did not respond to these antibiotics; fever continued, a black necrotic patch was noticed on the hard palate associated with painful swelling of the left cheek (Fig. 1), hence antibiotic coverage was changed. However, his condition worsened 48 h later, with a deterioration of all clinical signs and symptoms (swelling of the left cheek, periorbital edema, necrotic patch and fever). In addition, his TLC dropped to
400/μl and neutrophils to 100/μl. A possibility of fungal infection was considered and scraping from the necrotic lesion on the palate was taken for direct microscopy and culture. Direct microscopic examination (KOH mount) of the material revealed broad irregularly branched sparsely septate hyphae (Fig. 2). A presumptive diagnosis of zygomycosis was made and the patient was started on amphotericin B deoxycholate (i.v. 1.5 mg/kg per day). Scraped material from the palate was inoculated on to plates and tubes of Sabouraud’s dextrose agar in duplicate and incubated at 25°C and 37°C. Colonies were expanding, white to grayish, growth, completely occupying the entire tube and plate within 72 h, at both temperatures; however, no growth was seen at 55°C. Microscopically, mycelia, which were broad, sparsely septate, profusely branched with stolons and rhizoids, were seen. Sporangiophores were solitary and/or branched with septum just below the sporangium. Sporangia were spherical to pyriform 100–120 μm diameter. Spores were smooth-walled and spherical 3–4 μm diameter. This isolate was identified as *A. corymbifera* at the Post Graduate Institute of Medical Education and Research (PGI-MER), Chandigarh, India, and subsequently confirmed by Centers for Disease Control (CDC), Atlanta, GA, USA. Antifungal susceptibility test for amphotericin B was carried out as per National Committee for Clinical Laboratory Standards guidelines [2]; the minimum inhibitory concentration (MIC) was found to be 2.0 μg/ml.

Surgical debridement, which is the main-stay treatment for zygomycosis, was not attempted because of the patient’s thrombocytopenic status (platelet count: 60 000/μl). In order to know the extent of involvement of the sinuses, a computerized tomography (CT) scan was performed (Fig. 3). This revealed mucosal thicken-
ing in both maxillary antra (more pronounced on the left side) with opacification of the left maxillary sinus, erosion of the left orbital inferior bony margin, mucosal thickening of sphenoid sinus with evidence of extensive soft tissue swelling. Amphotericin B was continued for 4 days after the diagnosis of fungal infection. Unfortunately, the patient left the hospital against medical advice and died at his residence after 15 days.

Discussion

Zygomycosis is an uncommon life-threatening opportunistic fungal infection in the immunocompromized host [1,3]. While disease is most commonly linked to Rhizopus spp., other Zygomycetes, including Absidia, Mucor, Cunninghamella, Apophysomyces and Sakkanaea are also associated with human infection [1]. Several local and systemic predisposing factors have been associated with these infections [1,3,4]. High risk factors include diabetes mellitus, neutropenia, sustained immunosuppressive therapy, chronic prednisone use, iron chelators, broad-spectrum antibiotic therapy, severe malnutrition and primary breakdown in the integrity of the cutaneous barrier due to trauma, surgical wounds, needle sticks or burns [5,6]. A. corymbifera infections in patients with malignancy have been described [7–9].

The patient described was predisposed due to chemotherapy-induced neutropenia. Human disease with Zygomycetes can occur by inhalation of spores into the sinuses [1]. Extension from the sinuses into the mouth often occurs, producing painful, black, necrotic ulcerations onto the hard palate [1]. In this case too, a black necrotic patch on the palate was initially observed followed by swelling of the cheek, which might suggest that the route of spread was through the sinuses extending down to the oral mucosa.

A CT scan of the paranasal sinuses revealed bilateral maxillary and sphenoid sinusitis, left inferior orbital plate bony erosion, with soft tissue swelling on the left side of the cheek suggestive of invasive fungal infection (IFI) as described in the literature [10]. IFI, including zygomycosis, can occur in patients with febrile neutropenia of duration longer than 7–10 days following myelosuppressive therapy [6]. In addition, zygomycosis is known to be a potentially lethal fungal infection that can present with short duration of exposure to the usual risk factors in susceptible patients [11,12]. In the patient described, infection appears to have set in within a short span of 4 days after initiation of chemotherapy. Neutropenic patients having an absolute neutrophil count of <1000/μl for 1 week are at major risk for contracting zygomycosis [1]; which was the case in this patient.

In the past, cases of rhinocerebral zygomycosis were almost uniformly fatal [1]. Though the disease even today has a high mortality, the majority of successfully treated cases highlights the need of early diagnosis, institution of combined surgical and antifungal therapy with correction of the predisposing condition [1,11–13]. However, published reports of successful therapy by a surgical or medical modality alone are exceptions. The nature of the underlying disease is the most important determinant of survival. In this case the patient probably succumbed to the infection because debridement was not possible as a result of his thrombocytopenic status.

A high level of suspicion of zygomycosis in predisposed patients helps in the early diagnosis and implementation of appropriate therapy, which can lead to a better outcome.

Acknowledgements

The authors thank Dr A. Chakrabarti, Additional Professor, PGIMER, Chandigarh for identifying the isolate and Dr A. Padhye, Mycotic Disease Branch, CDC, Atlanta, Georgia, USA, for confirming isolate for us.

References

10 Earhart KC. Rhinocerebral Mucormycosis, in www.emedicine.com/med/topic2026.htm
11 Gebhardt F, Chastagner P, Maillot D, et al. Favorable outcome of orbital nasal sinus mucormycosis complicating the induction of
