Up-to Date Review And Case Report

Saprochaete capitata oropharyngeal infection in a neutropenic patient: unusual presentation

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Abstract – Introduction: Saprochea capitata is unusual etiologic agent in immunocompromised patients, particularly in those with hematologic malignancy and severe neutropenia. Most often, infections of the oral cavity are manifested clinically as oral candidiasis. Invasive forms are rarely described. Observation: a 63-year-old man consulted for pseudomembranous lesions associated with ulcer perforating lesion of the tongue and palatal region ulcerations. All evolving in a context of profound physical deterioration and severe neutropenia. Mycological examination showed Saprochaete capitata. The evolution was favorable with oral voriconazole. Comment: Saprochaete capitata invasive fungal infections have become an important cause of morbidity and mortality, particularly in hematology-oncology patients. Invasive or non-invasive, oropharyngeal involvement with this pathogen should not be underestimated in the neutropenic patient. They are the main starting point for fungemia of this pathogen, which is often fatal. Conclusion: Saprochea capitata is now recognized emerging etiologic agent in patients with hematological malignancy and severe neutropenia. Early detection and diagnosis of these fungal infections could lead to reduced morbidity and mortality, particularly in locally invasive infection.

Introduction

Saprochaete capitata (S. capitata), formerly known as Geotrichum capitatum, is an ascomycete fungus which has subject of several taxonomic revisions in recent decades [1]. It is a cosmopolitan yeast and a usual contaminant found in the environment and dairy products. As it is part of the normal flora of the skin, bronchi, mouth and the gastrointestinal tract in about 30% of the general population [2]. S. capitata Infections are very common and occur almost exclusively in immunocompromised patients, particularly those with hematologic malignancy and severe neutropenia [3,4].

We report a rare case of S. capitata invasive oropharyngeal infection in a neutropenic patient, through which will describe the clinical, biological and therapeutic aspect of this infection and comparison with published data.

A 63 year old man, non-alcohol-smoking, was admitted for fever, chills, headache and dysphagia. Oral cavity examination showed pseudomembranous lesions associated with ulcer perforating lesion of the tongue and ulcerations of the palatal region. All evolving in a context of profound physical deterioration and weight loss estimated at 7 kg. Empirical therapy combining fluconazole, ceftazidime and vancomycin has been initiated. The patient’s history dates back to June 2018 when he was treated for chronic lymphocytic leukemia whose response was complete after a treatment protocol combining rituximab, fludarabine and cyclophosphamide.

Clinical examination showed no lymphadenopathy or organomegaly. The thoracic scanner was without particularity. Blood test showed CRP at 49 mg/L, normochromic normocytic non-regenerative anemia (hemoglobin at 7.5 g/dL), thrombocytopenia at 48 × 109/L, neutropenia at 0.64 × 109/L, and lymphopenia at 0.14 × 109/L. The myelogram, which found a bone-marrow erythroblastosis estimated at 60%, multiline dysplasia and some images of hemophagocytosis, evoked a myelodysplastic syndrome probably secondary to therapeutic toxicity. All blood cultures returned negative.

Direct examination realized on lesions swab objectified the presence of numerous septate mycelial filaments with dichotomous ramifications and secondary filaments disposed at acute angles. Rare arthrospores have been observed (Fig. 1). Culture on Sabouraud-Chloramphenicol medium agar at 37°C allowed whitish, dry, wrinkled, finely and fluffy colonies after 48 hours (Fig. 2). Microscopic examination revealed arthro-
conidia and annelloconidia (Fig. 3). On the Api 20C Aux system (Biomerieux, France), the isolate assimilated only D-glucose and D-galactose. The urease test was negative. These morphological and biochemical characteristics were compatible with that of \textit{S. capitata}. The sequencing of the ITS1 and ITS2 regions for a more formal identification of the species was not realized due to lack of means.

At day 7 of treatment, the patient showed no signs of clinical improvement. Antifungal therapy was changed for oral voriconazole 200 mg twice daily and continued for 3 weeks. The evolution was favorable with disappearance of fever and complete regression of oral cavity lesions (Fig. 4). The patient was followed on an outpatient basis to explore his pancytopenia.

**Comment**

\textit{S. capitata} (teleomorph \textit{Magnusiomyces capitatus}) is an \textit{ascomycota} fungus belonging to the \textit{Saccharomycetes} class, Dipodascaceae family. Given a new in-depth taxonomic assessment based on the study of ribosomal structure, it has been reclassified in the \textit{Saprochaete} genus (instead of \textit{Geotrichum}) [1]. It is a negative urease yeast, non-fermenting and assimilates glucose and galactose. On blood agar medium and Sabouraud Dextrose Agar, it gives white to cream colonies, and can grow at 45°C and in presence of cycloheximide [5].

Over the past two decades, the incidence of invasive fungal infections (IFI) has increased considerably. They have become an important cause of morbidity and mortality, particularly in patients in hematology-oncology [6]. Infections with \textit{S. capitata} are among the rarest. According to an international antifungal surveillance program led by ARTEMIS DISK, the prevalence of \textit{S. capitata} was 1% among 11,240 non-Candida yeast isolates examined between 1997 and 2007 [7]. A multicenter study involving 589 adult and pediatric patients with malignant hemopathies, the incidence of IFI was 4.6%, and the prevalence of \textit{S. capitata} among all isolates in adult patients was 6.2% [3]. Similarly, this is the second case of IFI reported to \textit{S. capitata} [8] and the first case occurring in a patient with a malignant hemopathy in our institution.

According to previous \textit{S. capitata} IFI reports, fungal infections and pulmonary infections were among the most frequent [3,4]. Indeed, fungal infections of the oral cavity \textit{S. capitata} occurred most often in an array of superficial mucosal involvement similar to that of oral candidiasis [9–11]. The most aggressive damage that resembled of mucormycosis...
and aspergillosis ulceration has been rarely reported [12,9]. Invasive non-invasive, oropharyngeal involvement with this pathogen should not be underestimated in the neutropenic patient, Özdemir ZC et al. reported three cases of fatal fungemia at this yeast in patients of acute lymphoblastic leukemia whose starting point was an oral fungal infection [13]. In addition to clinical context of this patient, the invasive character was established in front of the soft tissue involvement illustrated by the tongue perforating lesion and the results of the mycological examination. In addition, fungemia was not excluded due to the very moderate sensitivity of the blood culture.

At present, the optimal antifungal treatments proposed are still unclear due to the rarity of this etiological agent and few published studies. A review of the literature suggests intrinsic resistance to echinocandins and moderate sensitivity to fluconazole and itraconazole [14,15]. However, clinical success has been reported with amphotericin B with or without 5-fluorocytosine [9,16,17]. Similarly, voriconazole can also be used alone or in combination with amphotericin B [18]. In this patient, treatment with oral voriconazole 200 mg twice daily for 3 weeks was successful, shown by the disappearance of the oropharyngeal lesions.

**Conclusion**

*S. capitata* is now recognized as an emerging etiological agent in patients with malignant hemopathy and severe neutropenia. Early detection and diagnosis of these fungal infections could lead to reduced morbidity and mortality, particularly in the case of locally invasive infection [11]. The morphological characteristics observed on direct examination and on stained smears can allow an early preliminary diagnosis, thus significantly reducing the time required for the establishment of an appropriate antifungal treatment [19].

**Conflicts of interests**

The authors declare that they have no conflicts of interest in relation to this article.

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