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Original Research Article

Pulmonary infection with *Geotrichum capitatum* in a patient with chronic obstructive pulmonary disease

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Abstract: Fungal lung infections due to *Geotrichum* are opportunistic, usually occurring on an immunosuppressed person, particularly severe neutropenia, or an imbalance of the normal microbial flora. *Geotrichum capitatum* is the most widely reported species in human pathology.We report case of pulmonary geotrichosis due to *Geotrichum capitatum* in a patient with a chronic pulmonary disease type of chronic obstructive pulmonary disease (COPD)**.**
Keywords: lung infection, *Geotrichum capitatum*.

INTRODUCTION

Pulmonary geaotrichosis is a fungal infection due to an emerging opportunistic fungus encountered mainly in immunocompromised patients [1]. Geotrichum is cosmopolitan filamentous yeast usually present in soil, manure, fruits and dairy products, especially cheeses. In humans, it can be isolated in the digestive tract, sometimes the respiratory tract and the skin [2, 3]. Currently, three species of Geotrichum have been described in human pathology: *G. candidum, G. clavatum* and *G. capitatum*. These species are responsible for deep, localized or disseminated infections. Disseminated forms occur most often in neutropenic patients [3].

We report a case of lung infection due to *Géotrichum capitatum* in a patient having chronic obstructive pulmonary disease confirmed in our laboratory of Parasitology-Mycology in University Hospital center Hassan II of Fez

CASE REPORT

It is a 66-year-old male patient followed for chronic obstructive pulmonary disease (COPD) in the stage of chronic respiratory insufficiency, which presents 15 days before his hospitalization an aggravation of his dyspnea associated with Thoracic pain and a productive cough and fever without hemoptysis. Physical examination reveals a tachypneic patient febrile and presenting Wheezing in lung auscultation. Laboratory tests demonstrated a leukocytosis at 14,360 / mm3 with a predominance of neutrophilic polynuclear cell (9710 / mm3) and eosinophilia (1090 / mm3) with elevated CRP at 108 mg / L.

Radiological findings revealed foci of condensation on the chest x ray.

A mycological examination of sputum was performed. The direct examination has demonstrated arthrosporic mycelial elements. The culture on Sabouraud-chloramphenicol agar medium is positive after 72 hours showing colonies of irregular contours having beige color (Fig. 1). The colonies grew at 27 and 37 ° C. Microscopic examination with Lactophenol Cotton Blue shows elongated rectangular Arthrospores (Fig.2) Identification is completed by the use of *Auxacolor yeast identification system* which specified the species: *Geotrichum capitatum* (Fig 3).

An antifungal treatment with Voriconazole (V-FEND) was started and relayed by Itraconazole at a posology of 200 mg twice a day in addition to its COPD treatment. The evolution was marked by the improvement of symptomatology with correction of hypereosinophilia.

Fig-1: white to cream coloured colonies with a butyrous texture of *Geotrichum capitatum*

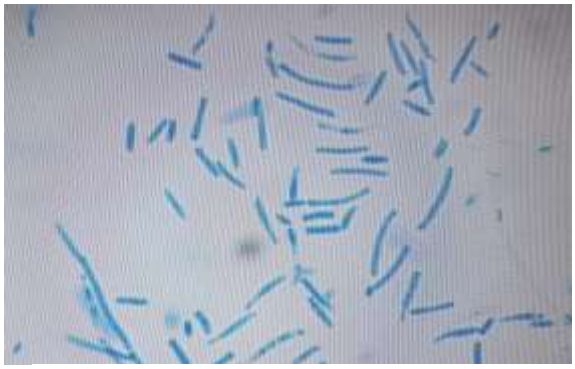

Fig-2: chains of arthroconida and separate arthroconidia

Fig-3: *Auxacolor yeast identification system* specifing the species of *Geotrichum capitatum*

DISCUSSION

Geotrichum capitatum, also called *Blastoschizomyces capitatus* from the environment, is known as commensal in the gastrointestinal tract or the upper airways of humans. Its opportunistic character is described in septicemic states with visceral involvement (pneumopathies, osteomyelitis) in deeply immunocompromised patients [4, 5]. In non-neutropenic patients, localized infections of *G. capitatum* have been described as endocarditis, osteomyelitis and meningitis as well as articular infection and pneumonia [6-8].

The Promoting factors of these opportunistic pathogens are: the use of cytotoxic therapeutics for marrow in patients with malignant haemopathies leading to severe neutropenia, long-term corticosteroid therapy, the increase of the use of chemotherapy for tumors, the emergence of AIDS, the increase of organ transplantation, and the development of immunotherapy for autoimmune diseases [9].

Apart from these groups, there are the Fungal Lung Infections in non-neutropenic subject, which affects two main populations: organ transplant recipients and subjects whose local pulmonary defenses are affected by a chronic pulmonary pathology as chronic obstructive pulmonary disease [COPD], emphysema and bronchial dilatation [10]. Our patient is in this category. Patients with chronic obstructive pulmonary disease (COPD) are more susceptible to opportunistic fungal infections because of structural bronchopulmonary changes and use of anti-

inflammatory drugs, and Antibiotic therapy selecting fungal ecology [9].

However, *G. capitatum*, is often misidentified as *Trichosporon sp*. 4 It is distinguished from *Trichosporon* by its microscopic characteristics such as the absence of budding of arthrospores, and by its biochemical characteristics such as the non-assimilation of carbon and the absence of urease [11].In the literature, in 1959 WEBSTER B.H reported four cases of bronchopulmonary geaotrichosis with polymorphic and non-specific radiological and clinical features [7]. ; And recently in 2014 I. El-Hassani et al. has published a case of lung infection due to *Geotrichum capitatum* in a former tuberculosis patient [12].

There are no specific signs of pulmonary geaotrichosis; Its clinical symptoms and radiological finding looks like other pulmonary fungal diseases giving the interest of the mycological examination which confirm the diagnosis.

Until now, no optimal curative treatment for systemic *G. capitatum* infections has been established [13]. Conventional Amphotericin B, alone or in combination with other antifungals drug seems to be the most commonly used in *G. capitatum* infection [8].the fluconazole does not appear to be a drug of choice [3].

The recent antifungals drug such as voriconazole, posaconazole and ravuconazole seems to be effective in treating geotrichosis as other invasive fungal infections [12, 14].
The favorable outcome usually is observed in non-neutropenic patients, with medical treatment or surgical treatment [12].

CONCLUSION

In conclusion, opportunistic pulmonary fungal infections should not be suspected only in immunosuppressed patients, especially neutropenic patients, but also in patients with chronic pulmonary pathology in order to treat on time and to improve the prognosis of these patients.

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