

Isolation of the rare opportunistic yeast *Saprochaete capitata* from clinical specimens of patients with SARS-CoV-2 infection

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INTRODUCTION

Saprochaete capitata (formerly known as *Geotrichum capitatum* or *Blastoschizomyces capitatus*) is a ubiquitous yeast found in environmental sources such as soil, water, air, plants and dairy products. This microorganism has been shown to be capable of colonizing the skin, bronchial and intestinal tracts of healthy people, producing serious opportunistic infections. Indeed, in immunocompromised patients, this yeast is responsible for dangerous infections and is associated with hospital infections especially in Europe. Since this microorganism is highly resistant to fluconazole, literature data suggest the use of antifungal molecules such as amphotericin B with or without association with flucytosine. The prevalence of concomitant fungal infections in patients with SARS-CoV-2 infection are not yet well known. In particular, so-called "opportunistic infections" caused by usually non-threatening microorganisms emerge along with or soon after major epidemics giving rise to infections that are very aggressive and, not infrequently, completely unresponsive to treatment. In this study, we describe thirteen clinical cases of Covid 19-positive patients where we detected the *Saprochaete capitata* microorganism in upper and lower airway samples, urine and blood.

MATERIALS AND METHODS

For the purpose of detecting the presence of Covid 19 infection in patients admitted to the clinics of the AOU "G. Martino" of Messina, we examined nasopharyngeal swabs with a multiplex RT-PCR (Real-Time assay, Allplex™ SARSCoV-2 Master Assay, Seegene). In order to determine the presence of the fungus *Saprochaete capitata* in SARS-Cov-2 positive patients, we cultured the biological samples on Sabouraud Dextrose Agar medium and, after the growth of mycetes, took the fungal colonies by identifying them with the automated Vitek 2 instrument (Biomérieux) using an identification database of 50 yeasts.

RESULTS

Among all samples analyzed, *Saprochaete capitata* was detected in thirteen clinical samples of Covid-19 positive patients (tables 1 and 2). This fungus was found in three urine samples, two pharyngeal swabs, seven bronchoaspirates and one blood culture samples. Figures 1 and 2 show the morphological appearance of the yeast.



Fig. 1



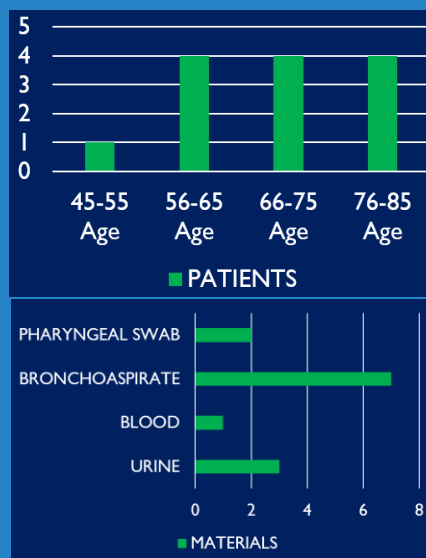
Fig. 2

Fig. 1. Macroscopic aspect of *Saprochaete capitata* in Sabouraud agar plate after 48 h of incubation at 37 °C. The figure shows smooth cream color colonies.

Fig. 2. Light microscopy observation of *Saprochaete capitata* in fresh samples. Numerous arthroconidia are observed (400x amplification).

| PATIENTS | AGE | MATERIAL |
|----------|-----|-----------------|
| 1 | 64 | BRONCHOASPIRATE |
| 2 | 80 | BLOOD |
| 3 | 62 | BRONCHOASPIRATE |
| 4 | 45 | BRONCHOASPIRATE |
| 5 | 81 | PHARYNGEAL SWAB |
| 6 | 73 | BRONCHOASPIRATE |
| 7 | 65 | BRONCHOASPIRATE |
| 8 | 83 | URINE |
| 9 | 73 | BRONCHOASPIRATE |
| 10 | 69 | URINE |
| 11 | 84 | PHARYNGEAL SWAB |
| 12 | 72 | BRONCHOASPIRATE |
| 13 | 64 | URINE |

Tab. 1



Tab. 2

TAB. 1. The table shows the age of infected patients.

TAB. 2. The table shows the clinical samples examined.

CONCLUSIONS

The description of these clinical cases could demonstrate an association between the SARS-Cov-2 viral infection and the *Saprochaete capitata* fungal infection, as a consequence of an impairment of the host's immune system due to the presence of a Covid 19 infection. Furthermore, the patients affected by the infection caused by this fungus fell into a similar age group between 65-80 years.