

Oropharyngeal Candidiasis among Egyptian COVID-19 Patients: Clinical Characteristics, Species Identification, and Antifungal Susceptibility, with Disease Severity and Fungal Coinfection Prediction Models

داء المبيضات الفموي البلعومي بين مرضى كوفيد19 المصريين: الخصائص السريرية ، وتحديد الأنواع ، والقابلية لمضادات الفطريات ، مع شدة المرض ونماذج التنبؤ بالعدوى المصاحبة للفطريات

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مكان النشر: **Diagnostics, 2022, 12(7), 1719**

سنة النشر: **2022**

معامل تأثير المجلة (Clarivate analytics): **3.6**

Abstract

The study aimed to investigate the causative species, antifungal susceptibility, and factors associated with oropharyngeal candidiasis (OPC) among Egyptian COVID-19 patients. This is an observational, case-controlled, single-center study that included three groups: COVID-19 patients (30), COVID-19 patients with OPC (39), and healthy individuals (31). Patients' demographic data (age, sex), laboratory tests, comorbidities, treatment, and outcomes were included. Candida species were isolated from COVID-OPC patient's oropharyngeal swabs by convenient microbiological methods. Isolated strains were tested for antimicrobial susceptibility, biofilm production, aspartyl protease, and phospholipase activities. The most common respiratory symptoms reported were dyspnea (36/39; 92.4%) and cough (33/39; 84.7%). Candida albicans was the most common isolated species, accounting for 74.36% (29/39), followed by Candida tropicalis and Candida glabrata (15.38% and 10.26%, respectively). Amphotericin was effective against all isolates, while fluconazole was effective against 61.5%. A total of 53.8% of the isolates were biofilm producers. The phospholipase activity of C. albicans was detected among 58.6% (17/29) of the isolates. Significant variables from this study were used to create two equations from a regression model that can predict the severity of disease course and liability to fungal infection, with a stability of 87% and 91%, respectively. According to our findings, COVID-19 patients with moderate to severe infection under prolonged use of broad spectrum antibiotics and corticosteroids should be considered a high-risk group for developing OPC, and prophylactic measures are recommended to be included in the treatment protocols. In addition, due to the increased rate of fluconazole resistance, other new antifungals should be considered.