Prevalence And Pathogenicity of Non-Albicans Candida Species Among Diabetic Patients with Post Infection of Covid-19 in Basrah

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Abstract
Aims The aim of the current study is to investigate the prevalence of non albicans Candida species in diabetic patients with post Covid 19 infections with evaluation the virulence factors of yeast isolates. Materials and Methods A total of 75 oral and nasal swabs were collected from post Covid 19 infection associated with diabetic patients from both Al-Moani and Al-Faihaa hospitals in Basrah province/Iraq from September to November 2021. The age groups of the patients were ranged between 10 to 90 years old. For data collection, a questionnaire form including name, age, gender, underlying disease, type of Covid 19 vaccine, type of antibiotics, corticosteroids, or immunosuppressive therapy besides the date of hospital admission were collected for each patient.Results Depending on the sings and symptoms of yeast infections and examination of specimens the prevalence of fungal infections appeared in 46(61.3%), oral infections 35(46.6%) and nasal infections in 40(53.3%), while the age groups (51-70) years appeared as the highest incidence of fungal infection and female appeared in 33 (71.7%) cases. In spite of non vaccinated patients were showed high accidence of yeast infections 17(80.95%) with comparison of vaccinated patients4(19.04%) .The identification of pathogenic yeast isolates revealed that classification of eight species due to four genera that involving Candida albicans ,C. dubliniensis, C. glabrata, C. parapsilosis, C. tropicalis, Magnusiomyces capitatus,Pichia kudriavzevii, Magnusiomyces ,Rhodotorula and Trichosporon ashii After excluded C. abicans, the incidence of non abicans Candida species showed that C. dubliniensi appeared in high percentage 8/21(38.09%) followed by C. tropicalis (19.04%). The enzymatic activity of yeast isolates (proteinase, phospholipase, esterase and hemolysin) appeared that the majority of the yeast isolates produce esterase activity, with 18(85.71%), while proteinase production was demonstrated minority 3(14.28%), as well as, the biofilm formation of yeast isolates showed that ability of most isolates 17(80.95%) to produce slim layer
Keywords: Diabetic patients, non albicans Candida infections, Covid19.

1. Introduction

Invasive fungal infections (IFIs) have generally turned out to be one of the major pathogens that have threatened human life worldwide. The dramatic enhancement in the prevalence of invasive fungal infections is directly associated with a tremendous increment in the number of immunocompromised people that are generally linked to some diseases like HIV, diabetes mellitus, Covid 19 infections, and other diseases that consequently trigger immunosuppression (Riley, 2021).
Diabetes mellitus (DM) is a common endocrine metabolic disease (Kałużna,et al, 2019) so that, the level of hyperglycemia in diabetes has a vital function in changing the balance of the oral microbiota because it provides an ideal environment for the development of secondary infections including oral candidiasis and superficial or systemic fungal infections (Babatzia et al., 2020).
Alarmingly, the globe has suffered recently from the spread of Covid 19, a novel generation of SARS-CoV-infections with Covid 19 world widely till 2 nd of November 2022.
Because Covid 19 alters both the immune and metabolic response through dysfunction of T lymphocytes, patients with Covid 19 were highly susceptible to various coinfections including fungal infections, therefore, it is reported that fungal infections have emerged as one of the leading coinfections with about 3.7% in Covid 19 patients (Nazari et al, 2022). With respect to C. albicans that is considerably the leading opportunistic coinfections in immunocompromised patients including Covid 19 patients (Peckham et al, 2020) there is a dramatic enhancement in the incidence of non albicans Candida in Covid 19 patients (Roudbary et al, 2021).

2. Materials and Methods

Collection of specimens a total of 75 oral and nasal swabs, oral 35(46.6%) and nasal 40 (53.3%) were collected from diabetic patients between September 2021 till November 2021 from both Al-Moani and Al-