

Evaluation of Fluconazole Resistance in Candida Species Isolated from Patients with Primary Immunodeficiency Disorders (PIDs) in 2022

Abstract:

Background: Antifungal drug resistance, as one of the major challenges in modern medicine, poses an additional threat to individuals with primary immunodeficiency disorders (PIDs) who lack effective immunity against infections.

Aim: This study aimed to determine the level of fluconazole resistance among Candida species isolated from patients with PIDs.

Materials and Methods: From February 2022 to February 2023, patients with primary immunodeficiency in Ardabil province were investigated. Samples were collected from PIDs patients and those referred to the educational and therapeutic center with suspected fungal lesions. Skin, mucosal, wound secretion, and potential lesion samples were collected for microbial cultivation and analysis. After sampling, the specimens were cultured on SDA medium and incubated at 30 degrees Celsius. Fungal colonies were isolated separately if yeast colonies were present. The identity of the yeasts was typed using PCR and ITS1, ITS4 primers. Drug resistance testing was performed using disk diffusion tests with fluconazole, itraconazole, ketoconazole, and nystatin. Additionally, hematological and laboratory indices from patient records, including blood counts, CRP, inflammatory cytokines, T and B cell counts, and other immune system markers, were collected and analyzed.

Results: The analysis of fluconazole resistance in Candida species isolated from patients with primary immunodeficiency (PIDs) showed no significant correlation with age, gender, species, clinical symptoms, and type of immunodeficiency (P-value > 0.05). Analysis of variance also revealed no significant correlation between age and resistance, gender and resistance, species and resistance, and type of immunodeficiency and resistance (P-value > 0.05). Comparison of fluconazole resistance in age groups, genders, species, and immune system syndromes showed no significant differences (P-value > 0.05).

Conclusion: In-depth analysis of Candida species isolated from patients with primary immunodeficiency reveals that fluconazole resistance is not associated with age, gender, species, clinical symptoms, or type of immunodeficiency. Additionally, separate analysis of immune system syndromes does not show a meaningful relationship with resistance. These findings indicate the complexity of factors influencing fluconazole resistance in this patient group.

Keywords: Fluconazole, Primary Immunodeficiency Disorder, Candida albicans, antifungal, antifungal resistance