

# An Evaluation of Opportunistic Fungi in the Samples of Iranian Patients

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## Abstract

Opportunistic fungi are a constantly evolving group of pathogens that When the immune system cannot raise an adequate response, they are activated, begin to multiply, and soon overwhelm the body's weakened defenses. This study was performed to evaluate the amount of opportunistic fungi in BAL samples of diverse group of patients by interpreting the results of the study based on direct examination and culture methods. After receiving patients' consent forms, and biography, a total of 120 BAL samples was taken by a pulmonary physician, and a part of the sample transferred to mycology laboratory for microbial examinations. From each BAL sample, 100 µl was cultured on Sabouraud Dextrose Agar (SDA) and for microscopic observation the sample was centrifuged and two smear was prepared from the sediment using Giemsa staining and 10% KOH. Yeast cells were counted on SDA and Direct smears were precisely examined for presence of yeasts or pseudohyphae, pneumocystis and filamentous fungi. The etiologic agents were identified by standard morphological and molecular Methods. Susceptibility of the filamentous isolates to itraconazole and voriconazole was evaluated using microdilution method. At the end, the results were analyzed with SPSS v 22. From the total of 120 BAL specimens 59 (49.2%) yeast colonies grew on SDA, which were considered to be normal flora, colonization, or infection. Out of 59 BAL samples containing yeasts, 29 samples contained > 10,000 colonies and were isolated from patients with pulmonary symptoms notably (asthma, cough, sputum, and hemoptysis). Also pseudohypha and blastoconidia of yeasts was seen in direct smear of 15 (51.7%) specimens with the mean of colony count of (42,000/mL) in culture media. *C. albicans* was the common fungus in the BAL samples of patients with pulmonary symptoms. In this study, 6 (5%) species of filamentous fungi including 3 (2.5%) isolates of *Penicillium* species (*P. variable*, *P. glabrum* and *P. thomii*), 2 (1.67%) isolates of *Aspergillus* species (*A. flavus* and *A. fumigatus*), 1 case (0.83%) *Pseudallescheria boydii* were isolated. In the direct smears stained with Giemsa, 7 cases (5.83%) of *Pneumocystis* cysts were observed. MIC rate of itraconazole for the isolates of *A. flavus*, *A. fumigatus*, *P. variable*, *P. glabrum*, *P. thomii*, *P. boydii* were 8, 2, 0.5, 0.5, 1 and 16 µg / ml, respectively, and MIC of voriconazole, for those isolates were of 4, 8, 8, 1, 8 and 1 µg / ml respectively. Rapid diagnosis of invasive fungal infection is essential to optimize outcomes. The strength of the present study was performing the yeast colony count, observing and reporting the amount of blastoconidia and pseudohypha in the direct smears and differentiating of etiologic agents by molecular methods. Due to our results and the abundance of *Candida* yeasts in BAL samples and the frequency of pseudohypha and blastoconidia which are gold standard in diagnosis of candidiasis, paying attention of pulmonologists are important considering the formation of these opportunistic fungi population in possible interference with selected therapies

## Biography

Parvin Dehghan has her expertise in medical mycology for about 30 years in Isfahan University of Medical Sciences. Her educational and professional background is on pathogenic fungi particularly *Candida* and *Aspergillus* with

antifungal sensitivity tests. She is associate professor and teaching Medical mycology for different under graduate and post graduate students. More than 30 MSc students have completed their theses under her supervision. More than 50 articles about fungal infections have been published by her in reputable journals.