Prevalence and antifungal susceptibility of Candida spp: from the sputum sample of patients in a tertiary care hospital in Sikkim

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Poster session I, September 21, 2022, 12:30 PM - 1:30 PM

Objectives: The role of Candida in sputum culture is unclear and is generally not treated when present in sputum samples. The objective of this study is to describe the clinical findings of patients with Candida spp. in sputum and their antifungal susceptibility pattern to know the local epidemiology of antifungal resistance.

Methods: Patients with respiratory symptoms attending the tertiary care hospital during the study period of 6 months from June 2021 to December 2021. A total of 23 sputum samples were processed in the microbiology laboratory. Samples were processed following conventional mycological procedures including direct microscopy (visualization of budding yeast cell on gram stain), growth on sabouraud dextrose agar, Germ tube test, and CHROMagar. The isolates were identified by rapid identification (RI) of yeast and yeast-like organisms in the BD PhoenixTM Automated Microbiology System.

Antifungal Susceptibility Testing (AFST) was carried out by disk-diffusion susceptibility testing. Zone interpretation criteria as per M44-A2 protocol of CLSI were used. Antifungal and azole were amphotericin B (20 mcg), itraconazole (10 mcg), Fluconazole (25 mcg), and voriconazole (1 mcg). Results of tests done on 23 isolates were collated and analyzed retrospectively.

Clinical profile of the patients was taken retrospectively from record section and analyzed.

Results: Out of 23 patients, most common presentation was fever followed by cough and dyspnea. A total of 14% patients were receiving some form of steroid (inhalational or inhalational). Only 2 patients were COVID positive by RT-PCR and 7/23% patients had some radiological findings like consolidation, emphysema change, etc. Immunosuppression condition was seen in 4 (17%) patients like tuberculosis and diabetes mellitus.

Of the 23 samples, C. albicans showed prevalence of 51.5% as compared with C. tropicalis (15%) and C. glabrata (4.5%). AFST showed Candida spp. was found to be mostly sensitive to voriconazole and fluconazole. Resistance to amphotericin B was seen in most Candida spp. Itraconazole was not susceptible to even one isolate only 4 samples were intermediates (Fig. 1).

Conclusions: Infections with Candida spp. are usually of low virulence and are associated with a few well-defined risk factors as immunosuppressed status, malignancy, and steroid therapy. Understanding these risk factors, identifying the species with changing trends in antifungal resistance, instigating infection control practices to reduce morbidity and mortality in critical care areas can improve outcomes.

Surveillance of the rates of Candida infections in critical areas, reporting outbreaks and continuous monitoring of antifungal susceptibility patterns will help in showing the best therapeutic management of complicated cases. Comparison of trends in infection rates amongst hospitals between various Indian cities and their resistance patterns can reveal vital information regarding the breakthrough of infection control measures. Most Candida infections are of low virulence and only become significant in the vulnerable critical care areas. With the rise in prevalence of inherently azole-resistant species and rising use of echinocandins in ICUs, identifying risk factors and controlling the infection early can improve patient outcomes.