Isolation, speciation and antifungal susceptibility testing of Candida isolates from various clinical specimens at a tertiary care hospital, Nepal

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Background: Candida species are responsible for various clinical infections ranging from mucocutaneous infection to life threatening invasive diseases. Resistance to antifungal agents has increased during the last decades. Thus identification of candida up to species level and its antifungal susceptibility testing has paramount significance in the management of candidal infections. CHROM agar media can be reliably used for speciation of Candida isolates which helps to rapid identification of Candida species. The objective of the present study was to determine different species of Candida from various clinical specimens and to determine antifungal susceptibility pattern of candida species to four antifungal agents namely ketoconazole, fluconazole, miconazole, and clotrimazole.

Methods: A total of 100 consecutive Candida isolates from various clinical samples were studied. Growths on Sabouraud’s Dextrose Agar were evaluated for colony appearance, macroscopic examination, gram staining, germ tube test and urea hydrolysis test. They were further processed for Candida speciation on CHROM agar. Different species of Candida were differentiated based on type of growth and color of isolates on CHROM agar media. Antifungal susceptibility testing was performed and interpreted for all the isolates using disc diffusion method as recommended by Clinical and Laboratory Standards Institute (CLSI) M44-A document.

Results: Out of 100 Candida isolates, Candida albicans (56%) was the most common species. Among the non-albicans candida (NAC), Candida tropicalis (20%) was the commonest isolate followed by Candida glabrata (14%) and Candida krusei (10%) respectively. Overall susceptibility pattern of Candida species to clotrimazole found to be more sensitive (82%) followed by fluconazole (64%), miconazole (44%) respectively whereas ketoconazole was found to be more resistance (86%).

Conclusions: Candida albicans was the predominant species responsible for various candidal infections. Among commonly used antifungal drugs clotrimazole, miconazole and fluconazole showed high sensitivity while ketoconazole was the least effective for both albicans and non-albicans group. CHROM agar is a simple, rapid & inexpensive method for identification of Candida species and is suitable for clinical laboratory with limited resources.