



ORIGINAL RESEARCH PAPER

Microbiology

A STUDY OF CANDIDIASIS IN HIV PATIENTS ATTENDING ANMMCH, GAYA

KEY WORDS: HIV, Candidiasis

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ABSTRACT

In this new scenario, fungal infections have emerged as a critical issue in the compromised host. Among these, *candida* spp. is the most common fungal pathogens.

Aims and objectives: To study the prevalence of Candidiasis in HIV patients attending ANMMCH, Gaya.

To identify the different species of *Candida* isolated in the study.

Materials and methods: The present study entitled "A study of Candidiasis in HIV patients attending ANMMCH Gaya" was conducted in the Deptt. Of Microbiology, March 2015 to September 2016.

Result: A total of 100 HIV Positive individuals admitted in different departments were taken up for this study. Prevalence of candidiasis in HIV Patients was 31.93%.

Conclusion: *Candidiasis* has emerged as a significant medical problem owing to indiscriminate long-term use of antibiotics, immunosuppressive agents and cytotoxic therapies, immune defects and more recently in AIDS and AIDS related complex.

INTRODUCTION

A dramatic change in the epidemiology of infectious diseases has taken place with the advent of new chemotherapeutic agents, new immunosuppressive agents, organ transplantation, parenteral alimentation, broad-spectrum antibiotics and advanced surgical techniques. [1]

Opportunistic infections are known to occur in people in whom the immune system is impaired and are caused by infectious agents that do not ordinarily produce disease in healthy individuals. Mims et al (1998) refers to immunocompromised hosts as people who have one or more defects in their body's natural defenses against microbial invaders. [2]

A host may be compromised by factors affecting either the innate or the adaptive system of immunity. Some of the causes of secondary adaptive immunodeficiency include infections especially HIV infection, neoplasia, diabetes mellitus, chemotherapy and radiation therapy, patients receiving solid organ transplant. [3]

Candidas are thin-walled, small yeasts (4 to 6 microns) that reproduce by budding. Even though there are more than 200 species of *Candida*, no more than 20 cause disease in humans with varying frequency [Kwon Chung et al 1992]. Of these, *Candida albicans* causes almost 100% of cases of oropharyngeal candidiasis and at least 90% of cases of *Candida vulvovaginitis*. When *Candida* produces invasive candidiasis, the other species of *Candida* begin to be seen with increased frequency. [4]

Candida species are the most frequent cause of fungal infections in the immunocompromised host. Species most commonly recovered include *Candida albicans*, *Candida tropicalis*, *Candida (Torulopsis) glabrata* and *Candida parapsilosis*. Others such as *Candida lusitanae*, *Candida rugosa* and *Candida pseudotropicalis* have more recently been reported to be associated with disseminated infection. Some are considered as a part of the usual flora, which makes the clinical significance of an isolate difficult to determine. Recovery of an organism from a normally sterile site or recovery of the same species from several different body sites is an indicator of disseminated infection with probable fungemia (Esther Segal.2005, Ostrosky Zeichner.2008). [5]

Candida spp. is also competing with the bacteria as one of the

leading causes of nosocomial infections [Banerjee et al 1991, Edmond et al 1999]. During the 1990's *Candida* spp. was the fourth most common agent causing nosocomial bloodstream infection. In addition the ability of *Candida* spp. to produce oropharyngeal candidiasis in patients with HIV-AIDS has made candidiasis the leading fungal infection in this immunosuppressed population [Sangeorzan et al 1994]. [6]

Exposure to *Candida* species is universal since these organisms are a part of the human gastrointestinal (GI) tract flora. The amount of growth in the GI tract and hence, the potential inoculum, is increased by broad spectrum antibiotic therapy and the use of chemotherapeutic agents. [7]

In recent years, an important concern has been the prominence of non-*albicans* species in some medical centers. Several of these species, specifically *C.krusei* and *C.glabrata* are less susceptible to fluconazole, the primary azole antifungal agent used to treat *Candida* infections. Whether fluconazole therapy is instrumental in selecting these more resistant species has not yet been clearly defined but it is likely that overuse of these azoles does play a role in some settings. Another concern is the emergence of fluconazole resistant *C.albicans* among AIDS patients who have frequent episodes of thrush that require treatment with multiple courses of fluconazole. [8]

The various manifestations of candidiasis often create dilemma for the physician, both in diagnosis and treatment, and are frequently the major contributors to or are the actual cause of death in the patient. Several studies from different parts of the country have reported prevalence of *Candidiasis* in different immunocompromised patients (Somansu Basu et al 2003, Chakrabarti A, MR Shivpraksah 2005, Xess et al 2007, Kothari A, Sagar V 2009). However, there has been no record of such studies being conducted in the state of Bihar till date. [9]

MATERIALS AND METHODS

The present study was carried out in ANMMC, Gaya. The cases for study were selected from the patients attending the medicine, ICTC, Endocrinology, Haematology, Nephrology and Intensive Care unit of ANMMC, Gaya over a period of one & half year (March 2015 – Sept. 2016).

HIV Patients with history and clinical features suggestive of fungal

infection were selected for the study. Informed consent was taken from the patient before conducting the study. The patients included both sexes and all age groups belonging to different socioeconomic status, religions and regions. Identification of candida was done by Direct Microscopic Examination, KOH Mount Preparation (Milne L.J.R. 1996), Gram's Stain (Dugoid JP.1996), India Ink Preparation (Milne L.J.R. 1996), Culture on Sabouraud's Dextrose Agar with Antibiotic, Lacto phenol Cotton Blue preparation (Milne L.J.R.1996), and India ink preparation.

Species identification was done by Germ Tube test, Corn Meal Agar with Tween 80 Morphology, Carbohydrate Utilization Test, HiCandida Identification Kit.

Result:

Out of 100 cases prevalence of Candidiasis was 31.93% of individuals with HIV/AIDS. The maximal number of patients positive for Candida spp. were in the age group of 31-40 years (43.1%) followed by 51-60 years (42.4%) age group. The sex distribution showed a male preponderance with 57.6% males and 42.4% females. The majority of the (36.14%) patients came from rural area.

The majority of the patients were from a low socioeconomic status with 26.80% having completed education upto twelve standard and 56.35% belonging to low income group.

Clinically the patients presented with fever in 71.37% of patients while the rest 38.62% manifested other clinical features.

The CD4 cell counts were between 51-100 cells/mm³ in 34% of HIV sero-positive patients while 26.8% had counts between 101-150 cells/mm³.

The species profile of Candida reveals that non-albicans Candida (47.70%) outnumbered the C. albicans (52.29%) group. Among the non albicans group, C. tropicalis (47.40%) was the most frequent isolate in all clinical specimen followed by C. parapsilosis 13.13%, C. krusei (18%), C. guilliermondii (7.30%), C.rugosa (7.30%), C. dubliniensis (2.58%), C. glabrata 2.58%) and C.zeylanoides (75%).[10]

Table 1: Profile of Candida Species in Study Population

Species	Total %
<i>Candida albicans</i>	52.29
<i>C. tropicalis</i>	47.40
<i>C. parapsilosis</i>	13.13
<i>C. krusei</i>	18
<i>C.guilliermondii</i>	7.30
<i>C. rugosa</i>	7.30
<i>C. dubliniensis</i>	2.58
<i>C. glabrata</i>	2.58
<i>C. zeylanoides</i>	2.35

Discussion:-

Candidiasis has emerged as a significant medical problem owing to indiscriminate long-term use of antibiotics, immunosuppressive agents and cytotoxic therapies, immune defects and more recently in AIDS and AIDS related complex.

A number of studies have investigated the prevalence and epidemiology of candidiasis in immunocompetent as well as immunocompromised groups of people. From India, a few studies have been reported in respect of different etiological species, clinical presentations, risk factors and age and sex. The prevalence rates of candidiasis in immunocompromised individuals and species identification have been found to be varying depending on the study design, geographical location, population group, and the associated risk factors.

Candidiasis is known to be the most common opportunistic infection in persons infected with HIV. In the present study, 18 (39.13%) out of 46 samples from 32 HIV seropositive patients were found to be associated with candidiasis, the overall

prevalence being 31.93% .

Costa Cr et al (2006) reported 62.6% prevalence of oral candidiasis. C. albicans was the prevailing species comprising of 50% of the isolates. C. dubliniensis was however not isolated in the study. The present study however noted a prevalence of 44.44% in patients with oropharyngeal candidiasis. However C.tropicalis(25%) , C.albicans (25%), C.guilliermondii(25%) each was the most prevalent species followed by C. parapsilosis (12.5%) and C. dubliniensis (12.5%).[11]

Tumbarello et al (1999) reported candidiasis to be more common in patients with advanced HIV disease. C. albicans (48%) was the most frequently isolated pathogen followed by C. tropicalis (19%) and C. glabrata (11%). On the contrary, in the present study, candidemia was found in 11.11% of cases and C. tropicalis was the only species isolated.[12]

An India study done by N Sud et al (2009) found the prevalence of Candidiasis as 35.33%. It was also reported that manifestations were seen with mean CD4 count of 196.33 cells/L. Males outnumbered females.[13]

Baradkar et al (1999) and Arora et al reported C. albicans as the most frequent species isolated. However, the present study noted an increased prevalence of non-albicans species with C. tropicalis (57.14%) being the most common isolate followed by C. albicans (22.22%), C. guilliermondii (14.2%) C. dubliniensis (7.1%), C. parapsilosis(7.1%), C.glabrata(7.1%) and C. krusei (7.1%).[14]

The findings of our study corresponds to that of the above-mentioned studies and lends credence to the view suggested in many studies that HIV predisposes to candidiasis.

Conclusion:-

It may be concluded from this study that people who are immunosuppressed are at higher risk for Candida infection. The study highlights the diverse manifestations caused by Candida species and throws light on the species prevalent locally.

The study also emphasizes on the need for introduction of mycological examination into the panel of methods evaluating the clinical condition of this category of patients and the need for formulating preventive and prophylactic measures.

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