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Original Research Article

# Prevalence of dermatological manifestations due to fungal etiology among HIV patients

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**Abstract:** The impact of the AIDS epidemic is already severe and continues to increase over the next decades. Many of the fungal infections are opportunistic infections among HIV/AIDS patients. People with weakened immune system are more vulnerable to fungal infections. The aim of the study is to find the prevalence of dermatological manifestation related to fungal infections among HIV patients and its correlation with CD4 cell count. In this study period a total of 100 HIV seropositive patients with dermatological manifestations were selected, examined for dermatological manifestations and were advised to undergo blood investigation for HIV testing, CD4 count. Patients with dermatological manifestations were analyzed among selected population. CD4 counts were also assessed. All the results were analyzed and tabulated. Out of 100 patients 45 patients were presented with fungal infections. Candidiasis (oral and genital) was present in 32% of patients. Majority (71%) of fungal infections, 32 out of 45 patients (71.1%) were having CD4 count below 200 cells/mm$^3$. Dermatophytosis were seen in 9% patients, of which T.cruris accounted for 6% patients and T.corporis 3%. HAART helps the patients to improve the immune system, in turn reduce the morbidity and mortality rate due to opportunistic infections. Need of fungal diagnostic facilities in all health centers to diagnose early and start appropriate treatment.
**Keywords:** CD4 count, HIV, Fungal infections

## INTRODUCTION:

The impact of the AIDS epidemic is already severe and continues to increase over the next decades. The last two decades have seen extensive research in the field of HIV and HIV in probably the most intensively studied virus in the history of biomedical research. Nearly 37 million people are living with HIV around the world and 2.1 million new infections occurring worldwide in 2015 alone [1].

In Individuals who have access to highly active ante retroviral therapy (HAART), in most cases, there is a marked reduction of Opportunistic infections (OIs) and opportunistic neoplasms (ONs). HAART reduces the opportunistic infections by increasing the number of CD4 immune cells [2]. However, more than 95 percent of HIV infected individuals have no access to any medical interventions.

Many of the fungal infections are opportunistic infections among HIV/AIDS patients. People with weakened immune system are more vulnerable to fungal infections [3]. Cutaneous manifestations of HIV disease may result from HIV infection itself or from opportunistic infections [4].

HIV patients prone to different fungal dermatological manifestations such as oral candidiasis, dermatophytosis, seborrhoeic dermatitis, skin infections of penicillium, histoplasma, cryptococcus etc., Oral candidiasis was among the diseases included in the first description of AIDS [5] and the candida species most often involved is Candida albicans, though Candida stellatoides and Candida tropicalis are occasionally seen. Oropharynx is the most common site of mucosal candidiasis involvement [6].

The aim of the study is to find the prevalence of dermatological manifestation related to fungal

infections among HIV patients and its correlation with CD4 cell count.

## MATERIALS AND METHODS:

This study was done from October 2015 to May 2016, a prospective study which has started after taking approval from institutional ethical committee. Study was done among HIV seropositive patients attending ART center at Government Medical College, Anantapuram. Informed consent has taken from all patients before doing this study.

In this study period a total of 100 HIV seropositive patients with dermatological manifestations were selected, examined and were advised to undergo blood investigation. All the patients history regarding age, socioeconomic status, address, presenting complaints, past history, treatment history were collected and dermatological manifestations were examined.

All the patients were underwent pretest counseling, before blood samples collection. Blood samples were tested for anti-HIV antibodies using one confirmatory and two screening tests according to NACO guidelines. Tests for HIV detection done were COOMB method, TRIDOT methods, and TRILINE method.

Patient blood samples were also tested for CD4 count using BD autoanalyzer which follows flowcytometry principle. Patients presenting with dermatological manifestations which were related to fungal infections, were analyzed among selected population. CD4 counts of all patients were also assessed. All the results were analyzed and tabulated.

## RESULTS:

A total of 100 HIV seropositive patients with dermatological manifestations were selected to do this study. 47% of the total patients in the study belong to the age group of 31-40 years. 63 males and 37 females leading to a male: female ratio of 1.7:1 was seen. In this study 76% were literates and remaining 24% were illiterates. Out of 100 patients 45 patients were presented with fungal infections. Candidiasis (oral and genital) was present in 32% of patients. Majority (71%) of fungal infections, 32 out of 45 patients (71.1%) were having CD4 count below 200 cells/mm3 (Table No.1).

Oral candidiasis is the major clinical feature observed among HIV patients, were 25% and majority of them have CD4 count below 200 cells/mm3 (Fig No.1).

**Table-1: Various types of fungal infections in relation to CD4 count**

| Fungal infections | CD4 count (cells/mm3) | | | Total (n=100) | Percentage |
|---|---|---|---|---|---|
| | <200 | 200-500 | >500 | | |
| **Oral candidiasis** | 19 | 6 | 0 | 25 | 25 |
| **Candidal vulvovaginits** | 3 | 1 | 1 | 5 | 5 |
| **Candidal balanoposthitis** | 2 | 0 | 0 | 2 | 2 |
| **T.cruris** | 3 | 2 | 1 | 6 | 6 |
| **T.corporis** | 2 | 1 | 0 | 3 | 3 |
| **Malassezia furfur** | 3 | 1 | 0 | 4 | 4 |
| **Total** | 32 | 11 | 2 | 45 | 45 |

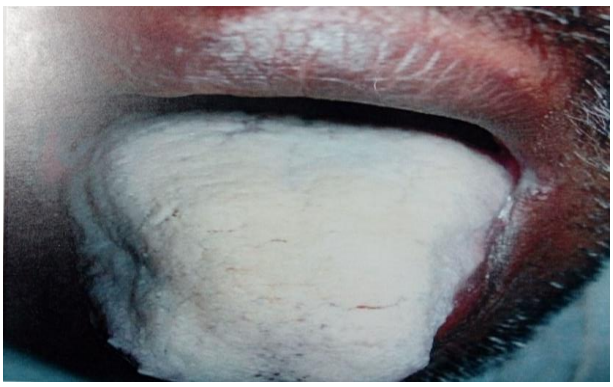

**Fig 1: Showing Oral candidiasis**

## DISCUSSION:

In the present study, 45 patients were having fungal infections majority were having multiple manifestations. Candidiasis (oral and genital) was present in 35% of patients. Majority (71%) were having CD4 count below 200. 25% had oral candidiasis, 5% had candidial vulvovaginits, 2% had candidal balanoposthitis, 6% had T.cruris, 3% had T.corporis, and 4% had malaseezia fur fur.

Incidence of candidiasis range from 13% to 66% and depends on disease stage of study population [7-9]. In patients at high risk for AIDS, the presence of unexplained oral canididiasis predicts the development of serious opportunistic infections, more than 50% of the time [10].

Candidiasis of oesophagus is one of the opportunistic infection seen in AIDS, and its presence is diagnostic of AIDS. Furthermore, among those at risk, oral candidiasis may be predictive of subsequent development of AIDS [11]. Oral candidiasis is reported in 46.3% to 68% of HIV infected cases in India [6]. The incidence of oropharyngeal candidiasis increases with advancing immunodeficieny [12]. Oropharynx and oesophageal candidiasis have been reported to occur during acute symptomatic HIV infection. Candida albicans is the most common isolate

When the CD4 cell count falls below 200 cells/mm3, most life threatening opportunistic infections occur, which are responsible for increase in mortality rate among HIV/AIDS patients [13]. Pseudo membranous candidiasis (thrush) is the most common presentation [12] and is characterized by multiple white, non-adherent patches overlying on erythematous, often eroded base.

Dermatophytosis was seen in 9% patients, of which T.cruris accounted for 6% patients and T.corporis for 3% as per this study. Munoz *et al.;* [14] reported an incidence of 10% in his study of 10161 patients, which matches our study. As per this study Tinea cruris was seen in 6% patients. The disease was extensive when present, involving large surface areas. Tinea corporis was seen in 3% patients and was again extensive in distribution.

The prevalence of dermatophytosis was slightly increased as compared to a general population incidence of 8.1%, as reported by Nair *et al.;* [10] from Trivandrum. But various studies from India and abroad have not found an increase in the overall incidence, but have found an increased in severity of dermatophytosis. The mean CD4 count for fungal infection was 191±138 and was consistent with the study by Kumaraswamy *et al.;* [15] (178 cells/mmm3). Sanjay M Chawhan *et al.;* [16] Total fungal infections were 6 (5.45%), which included candidiasis (2), dermatophytoses-tinea (2), cryptococcosis (1) and histoplasmosis (1).

In these study skin lesions of cryptococcosis, penicilliosis, and histoplasmosis were not observed. The discovery of antiretroviral therapy and improved usage of those eventually reduced the incidence of fungal infections and also deaths of HIV/AIDS patients due to fungal infections [17, 18].

**CONCLUSION:**

Many of the studies documented that there is decreasing in the incidence of opportunistic infections since the discovery of HAART. HAART helps the patients to improve the immune system, in turn reduce the morbidity and mortality rate due to opportunistic infections. Need of fungal diagnostic facilities in all health centers to diagnose early and start appropriate treatment.

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