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## Research Article

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# PREVALANCE AND INCIDENCE OF MOST COMMON COMMUNICABLE DISEASES IN ART PATIENTS

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### ABSTRACT

**Introduction:** HIV is a retrovirus that primarily infects components of the human immune system such as CD4+ T cells, macrophages and dendritic cells. It is estimated that India had approximately 1.2 lakh new HIV infections in 2013, as against 2.7 lakh in 2012. Common infections associated with HIV/AIDS are candidiasis, invasive cervical cancer, coccidioidomycosis, cryptococcosis, cryptosporidiosis, chronic intestinal cytomegalovirus diseases, encephalopathy, HIV-related herpes simplex, histoplasmosis, isosporiasis, chronic intestinal, kaposi sarcoma, lymphoma, mycobacterium avium complex, tuberculosis, pneumocystis carinii pneumonia, progressive multifocal leukoencephalopathy, salmonella septicaemia, toxoplasma of brain, wasting syndrome due to HIV. Most commonly TB and Candidiasis are majorly seen in HIV patients. Globally 30% of HIV infected persons are estimated to have concomitant infection with "Mycobacterium Tuberculosis". Oropharyngeal candidiasis occurs when CD4 count is 200-500 cell/mm<sup>3</sup>, with fall in CD4 count to <200 cells/mm<sup>3</sup>, oesophageal candidiasis occurs in HIV infected patients.

**Aim of the study:** The aim of the study is to estimate the incidence and prevalence of common communicable diseases (Tuberculosis, Candidiasis) in ART patients.

**Methodology:** The present were carried out in the Department of Skin & Venereology (ART center) in a tertiary care teaching hospital, RIMS, Kadapa for 6 – months. Patient was enrolled based on inclusion criteria and exclusion criteria

**Results:** Out of 206, 132 (64.07%) were had Communicable diseases which includes 110 (53.39%) TB and 22 (10.67%) Candidiasis.

**Conclusion:** Patients with HIV there is increased risk of opportunistic infections (communicable diseases like TB, Oral thrush, STD's etc.,) due to decreased immunity (CD4+ T cell count) in them. Finally in this study we concluded that the low rate of incidence was seen after counselled the patients.

**Keywords:** HIV, Communicable, Candidiasis, Mycobacterium.

### INTRODUCTION

HIV is a retrovirus that primarily infects components of the human immune system such as CD4+ T cells, macrophages and dendritic cells. It directly and indirectly destroys CD4+ T cells. HIV is a member of the genus Lenti virus, part of the family retroviridae.<sup>1</sup>

Types of HIV have been characterized: HIV-1 and HIV-2. HIV-1 is the virus that was originally discovered (initially

referred as LAV or HTLV-III). It is more virulent, more infective and is the cause of the majority of HIV infections globally.<sup>1</sup>

It is transmitted by Sexual contact, Exposure to infected body fluids or tissues and from mother to child during pregnancy, delivery or breastfeeding (known as Vertical Transmission).<sup>2</sup>

It is estimated that India had approximately 1.2 lakh new HIV infections in 2013, as against 2.7 lakh in 2012. Of the

1.2 lakh estimated new infections in 2013, the 6<sup>th</sup> high prevalence states. Account for only 39% of the cases, while the states of Orissa, Bihar, West Bengal, Uttar Pradesh, Rajasthan, Madhya Pradesh and Gujarat account for 41% of new infections.<sup>3</sup>

People with healthy immune systems can be exposed to certain viruses, bacteria, or parasites and have no reaction to them, but people living with HIV/AIDS can face serious health threats from what are known as "Opportunistic" Infections(OIs). OIs are signs of a declining immune system. Most life threatening OIs occur when your CD4+count is below 200 cells/mm<sup>3</sup>. OIs are the most common cause of death for people with HIV/AIDS.<sup>4</sup>

Common OIs associated with HIV/AIDS are candidiasis, invasive cervical cancer, coccidioidomycosis, cryptococcosis, cryptosporidiosis, chronic intestinal cytomegalovirus diseases, encephalopathy, HIV –related herpes simplex, histoplasmosis, isosporiasis, chronic intestinal, kaposi sarcoma, lymphoma, mycobacterium avium complex, tuberculosis, pneumocystis carinii pneumonia, progressive multifocal leukoencephalopathy, salmonella septicaemia, toxoplasmosis of brain, wasting syndrome due to HIV.<sup>5</sup> Most commonly TB and Candidiasis are majorly seen in HIV patients.

The incidence of TB is currently increasing in HIV-infected patients. Globally 30% of HIV infected persons are estimated to have concomitant infection with "Mycobacterium Tuberculosis". 33.2 million persons infected with HIV, 1/3rd are estimated to also be infected with 'Mycobacterium Tuberculosis'. The treatment of TB is also more difficult to manage in HIV-infected patients, particularly with regard to pharmacological interactions 20 to inhibition or induction of cytochrome P450 enzymes by protease inhibitors with Rifampicin or Rifabutin, respectively.<sup>6</sup>

In HIV-infected patients, clinical manifestations of pulmonary TB reflect different levels of Immunosuppression. Earlier in the course of HIV disease, TB is more likely to present as classic reactivation-type disease, whereas patients with advanced Immunosuppression are more likely to present with findings consistent with 1oTB.<sup>7</sup>

Successful treatment for drug-sensitive TB generally requires 6 months of therapy. The 1<sup>st</sup> two months of treatment is often referred to as the intensive phase and typically entails the

use of 4 drugs – Rifampin, Rifamycin, Isoniazid, Pyrazinamide and Ethambutol followed by 4 months (called Continuation phase) with Rifampin and INH alone. All HIV-infected patients with active TB should receive Trimethoprim-Sulfamethoxazole prophylaxis.<sup>7</sup>

Candidiasis is a common infection caused by yeast-like fungus. Oropharyngeal candidiasis occurs when CD4 count is 200-500 cell/mm<sup>3</sup>, with fall in CD4 count to <200 cells/mm<sup>3</sup>, oesophageal candidiasis occurs in HIV infected patients. Oropharyngeal candidiasis was among the initial manifestation of HIV induced immunodeficiency to be recognised.<sup>8</sup>

The 1<sup>st</sup> step in the development of a candidial infection is colonization of the mucocutaneous surfaces. The routes of candidial invasion include (1) disruption of a colonized surface (skin or mucosa), allowing the organisms access to the bloodstream, and (2) per sorption via the gastrointestinal wall, which may occur following massive colonization with large numbers of organisms that pass directly into the bloodstream.<sup>9</sup>

#### **Aim of the study:**

The aim of the study is to estimate the incidence and prevalence of common communicable diseases (Tuberculosis, Candidiasis) in ART patients.

#### **Objectives of the study:**

- To estimate the prevalence and incidence of Communicable diseases (TB & Candidiasis) in ART patients.
- To create the awareness to the patients on Communicable diseases in HIV patients.

#### **METHODOLOGY:**

The present study "Prevalance and incidence of most common communicable diseases in art patients in a tertiary care teaching hospital", which were carried out in the Department of Skin & Venereology (ART center) in a tertiary care teaching hospital, RIMS, Kadapa for 6 – months ( December 2013 to May 2014). Patient was enrolled based on inclusion criteria and exclusion criteria.

#### **Inclusion criteria:**

- Patient with age group > 12years.
- Patients who are diagnosed with HIV from more than 6 months.
- Patients with any one of the Communicable (i.e., TB and Oral candidiasis).

**Exclusion criteria:**

- Children less than 12 years old.
- Patients without NCDs and CD4 are not included.
- Patients who are diagnosed with HIV recently.

**Results:** During the study period a total of 206 art patients were enrolled. Out of 206 cases, 132 were males and 74 were females, based on age wise distribution majority of patients were in between 31 – 40 years and 41 – 50 years.

Out of 206 patients 109 patients were illiterates, 40 patients had an educational status of primary school, 30 patients had an educational status of secondary school, 27 patients had an educational status of college and above. Based on body weight patients with 51-60kgs are more prone to disease. Patients with cd4+ count in between the range of 301 – 600 were more.

<b>Gender</b>	<b>Male</b>	<b>Female</b>
	132	74
<b>Age group</b>		
12-20	1	3
21-30	27	23
31-40	56	24
41-50	39	1
51-60	8	5
>60	1	0
<b>Educational status</b>		
illiterates	65	44
primary	24	16
secondary school	21	9
college and above	22	5
<b>Body weight</b>		
31-40	10	18
41-50	39	31
51-60	47	15
61-70	28	8
71-80	6	2
<b>CD+4 cell count</b>		
0-300	34	22
301-600	63	28
601-900	25	15
901-1200	7	7
1201-1500	2	0
1501-1800	1	2
<b>Risk factors</b>		
smoking	18	10
alcohol		
<b>ART therapy</b>		
1 <sup>st</sup> line	91	57
2 <sup>nd</sup> line	41	17

**Distribution of study population based on communicable diseases:** Out of 206, 132 (64.07%) were had communicable diseases which includes 110 (53.39%) tb and 22 (10.67%) candidiasis.

Communicable diseases	TB	Candidiasis
132	110	22

**Distribution of study population based on tuberculosis (TB):** Among 132(64.07%) communicable diseases, 110 (53.39%) were tb and 22 (10.67%) were candidiasis.

Out of 110 (53.39%), 74 (35.92%) were male and 36 (17.47%) were female tb art patients were between different age groups as follows.

Age group	Male	Female
12 – 20	1(0.48%)	3(1.45%)
21 – 30	20(9.70%)	14(6.79%)
31 – 40	30(14.56%)	10(4.85%)
41 – 50	19(9.22%)	6(2.91%)
51 – 60	3(1.45%)	3(1.45%)
>60	1(0.48%)	0

**Distribution of study population based on candidiasis:** Among 132(64.07%) communicable diseases 22 (10.67%) were candidiasis. out of 22 (10.67%), 8 (3.88%) were male and 14 (6.79%) were female candidiasis art patients were between different age groups as follows.

Age group	Male	Female
12 – 20	0	0
21 – 30	1 (0.48%)	6 (2.91%)
31 – 40	5 (2.42%)	5 (2.42%)
41 – 50	2 (0.97%)	3 (1.45%)
51 – 60	0	0
>60	0	0

**Distribution of study population based on communicable combinations:**

Out of 206, 12 (5.82%) & candidiasis, among them 8(3.88%) were male and 4(1.94%) were female.

**DISCUSSION:**

Globally 30% of HIV infected persons are estimated to have concomitant infection with Mycobacterium Tuberculosis (TB). In 2008, there were an estimated 1.4 million new cases of TB among persons with HIV infection, TB accounted for 26% of AIDS related deaths. The incidence of TB is currently increasing in HIV-infected patients. TB endemicity is high; reflecting the susceptibility of this group of patients to mycobacteria.<sup>10</sup>

Oropharyngeal candidiasis occurs when CD4 count is 200-500 cell/mm<sup>3</sup>, with fall in CD4 count to <200 cells/mm<sup>3</sup>, oesophageal candidiasis occurs in HIV infected patients. 'Oropharyngeal candidiasis' was among the initial manifestation of HIV induced immunodeficiency to be recognized.<sup>11</sup>

Out of 206; 132 patients were affected with Communicable diseases among them 132 were affected with TB and Candidiasis 22 the majority of TB 40(19.41%) affected age group is 31 – 40, least were 1 affected by > 60yrs whereas Candidiasis also majorly affected 31-40 with 10 Which is Supported by Darshini Govindasamy et al.,<sup>12</sup> & Farrah J. Mateen et al.,<sup>13</sup> & S. Swaminathan et al.,<sup>14</sup>).

Our present study assessed Communicable diseases (TB & Candidiasis) Prevalence & Incidence, it was found to be 6.13 & 2.75 & 1.71 & 0.45 respectively. Which is Supported by Bernard J Ngowi et al.,<sup>15</sup> & S. Swami Nathan et al.,<sup>14</sup> & Okonkwo E. C et al.<sup>16</sup>, & Poorandokht Davoodli et al.,<sup>17</sup>

**CONCLUSION:**

Patients with HIV there is increased risk of opportunistic infections (communicable diseases like TB, Oral thrush, STD's etc.,) due to decreased immunity (CD4+ T cell count) in them. TB is the most common bacterial infection (Mycobacterium tuberculosis) & Candidiasis is the common fungal infection (Candida albicans), occurring in HIV patients due to depletion of CD4+ T cell count. In our study we observed that prevalence of communicable diseases in HIV patients were high then compared with incidence. Finally in this study we concluded that the low rate of incidence were seen after counselled the patients.

**REFERENCES**

1. International Committee on Taxonomy of Viruses (2002). "61. Retroviridae". National Institutes of Health. Retrieved February 28, 2006.
2. Berger EA, Doms RW, Fenyö EM, Korber BT, Littman DR, Moore JP, Sattentau QJ, Schuitemaker H, Sodroski J, Weiss RA (1998). "A new classification for HIV-1". *Nature* 391 (6664): 240. doi:10.1038/34571. PMID 9440686.
3. HIV/AIDS: Vaccination & Natural Resistance [Infoplease.com](http://infoplease.com)
4. <http://aids.gov/hiv-aids-basics/staying-healthy-with-hiv-aids/potential-related-health-problems/tuberculosis/index.html> By: John Hardie BDS, MSc, PhD, FRCD(C)2012-09-01
5. Nicki R. Colledge, brain R. Walker, Stuart H. Ralston, David son's principles and practice of medicine .21 edition. Elsevere publications 2010, page no: 385
6. Tuberculosis in HIV-infected patients: a comprehensive review. Aaron L1, Saadoun D, Calatroni I, Launay O, Mémain N, Vincent V, Marchal G, Dupont B, Bouchaud O, Valeyre D, Lortholary O.
7. American Thoracic Society; Center for Disease Control and Prevention; Infectious Diseases Society of America. Treatment of Tuberculosis. *MMWR Recomm Rep*. 2003 Jun 20;52(RR-11):1-77.
8. Yang YL. Virulence factors of Candida species. *J Microbiol Immunol Infect*. Dec 2003;36(4):223-8.[Medline].
9. Pappas PG. Invasive candidiasis. *Infect Dis Clin North Am*. Sep 2006;20(3):485-506. [Medline].
10. Poornima tiwari, shashank tiwari, "A Text book of Epidemiology made easy" 1st Edition. Delhi. Jaypee brothers medical publishers private limited;2013:page no:51.
11. O. M. Eweka Nigeria Olutola M. Eweka<sup>1</sup>, Gbemisola A. Agbelusi<sup>1</sup>, Onatolu Odukoya, Prevalence of oral lesions and the effects of HAART in adult HIV patients attending a tertiary hospital in Lagos, / *Open Journal of Stomatology* 2 (2012) 200-205.
12. Darshini Govindasamy<sup>1\*</sup>, Katharina Kranzer<sup>1,2</sup>, Nienke van Schaik<sup>1</sup>, Farzad Noubary<sup>3,4,5</sup>, Robin Wood<sup>1,6</sup>, et.al, Linkage to HIV, TB and Non-Communicable Disease Care from a Mobile Testing Unit in Cape Town, South Africa. November 2013 | Volume 8 | Issue 11 | e80017
13. Farrah J mateen, Steve Kantersb, Robert Kalyesubulad, Barbara Mukasae, Esther Kawuma et al Hypertension prevalence and Framingham risk score stratification.
14. S. Swaminathan, R. Ramachandran, G. Baskaran, C. N. Paramasivan, U. Ramanathan, et.al, Risk of development of tuberculosis in HIV-infected patients, *INT J TUBERC LUNG DIS* 4(9):839–844.
15. Bernard J Ngowi Bernard J Ngowi, Sayoki G Mfinanga, Johan N Bruun and Odd Morkve

- Pulmonary tuberculosis among people living with HIV/AIDS attending care and treatment in rural northern Tanzania.vol.2, Sep-30, 2008.
16. OkonkwoAlo M. N.2, Nworie O.2, Orji J. O.1, Agah M. V, Prevalence of oral candida albicans infection in HIV sero-positive patients in Abakaliki . American Journal of Life Sciences 2013; 1(2): 72-76 Nigeria.
  17. Poorandokht Davoodi Mina Hamian, Reza Nourbaksh, Fatemeh Ahmadi Motamayel Oral Manifestations Related To CD4 Lymphocyte Count in HIV-Positive Patients . JODDD, Vol. 4, No. 4 Autumn 2010.