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Clinico epidemiological profile of HIV-TB co-infected patients in Coastal South India

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Abstract

Introduction: Human Immunodeficiency Virus (HIV) and Tuberculosis (TB) co-infection is considered to be one of the important public health problems globally. Tuberculosis is a leading cause of mortality among people living with HIV/AIDS. **Objectives:** To find out the trends of HIV and TB co-infection, socio-demographic and clinical profile of HIV and TB co-infected patients. **Methods:** A hospital based descriptive study was done at a tertiary care teaching hospital in Mangalore. The hospital records of all HIV-TB co-infected patients admitted between January 2008 and December 2013 were reviewed and data were captured in data capture sheet. The data obtained was analysed using SPSS version 11.5, and the results were expressed in proportions. **Results:** It is observed that there is a decline in number of HIV positive cases from 2001 to 2013 except for the year 2006. Proportion of HIV positive cases among Integrated Counselling and Testing Centre (ICTC) clients ranged from 5.1% to 37.5%. The proportion of TB infection among HIV positive patients ranged from 6.5% to 17.3%. Majority of the co-infected patients were aged below 40 years (n=50, 56.8%). More than half of them (n=61, 69.3%) were males and the remaining were females (n=27, 30.7%). Heterosexual route was found to be the most common mode of HIV transmission among the HIV-TB co-infected patients (n=87, 98.9%). Around 50% of the co-infected cases were found to have extra-pulmonary tuberculosis (n=44). **Conclusion:** Even though the trend of HIV-TB co-infection is on decline, sustained efforts are needed to detect and treat TB among HIV infected patients to curb the dual menace of HIV-TB epidemic.

Keywords: HIV-TB, co-infection, profile, India

INTRODUCTION

Co-infection of Human Immunodeficiency Virus (HIV) and tuberculosis (TB) is considered to be one of the emerging medical conditions responsible for huge social and economic burden globally. Tuberculosis is a leading cause of mortality among people living with HIV/AIDS. Tuberculosis infection with HIV weakens the immune system and activates latent tuberculosis infection (Girardi et al., 2001). At least one in four deaths among people living with HIV can be attributed to tuberculosis and majority in resource-limited settings. HIV infects and destroys CD4+ T lymphocytes. CD4+ T lymphocytes are essential for effective cell mediated immune response to Mycobacterium tuberculosis. Activated T lymphocytes can induce the production of gamma interferon, which can bring about the activation of macrophages. These activated macrophages will limit the further active multiplication of TB bacilli. As the CD4+ function and count declines in HIV, there is a strong predisposition to tuberculosis (Flynn and Chan, 2001). Tuberculosis is more difficult to diagnose and therefore progresses rapidly in HIV positive patients. The psycho-social challenges include stigma attached to the burden of double disease. Interaction between anti-tubercular and antiretroviral drugs has the potential for producing severe side effects and a long treatment duration of 18 to 24 months (Lawn and Churchyard, 2009; Low and Eng, 2009).

According to World Health Organization (WHO) report 2014, globally one-third of the 35 million people living with HIV are infected with latent TB. It was estimated that around 1.1 million new cases

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of TB occurred globally among people with HIV Positive in the year 2013 and it accounted for some 360,000 deaths worldwide. HIV infected individuals are 29 times more prone to develop active TB compared to non HIV individuals. HIV infected patients are at high risk of mortality from multidrug-resistant and extensively drug-resistant TB (WHO HIV- Associated Tuberculosis, 2014). As per Government of India statistics (March 2013), there were around 1.81 million people living with HIV (PLHIV) registered at the Anti Retroviral Therapy (ART) Centres situated across the country (National AIDS Control Organization. Antiretroviral Therapy Guidelines for HIV infected Adults and Adolescents, 2013). In India, 55-60% of AIDS patients reportedly has tuberculosis and it is one of the leading causes of death among people living with HIV/AIDS (PLHA) (Central TB Division Training Module for Medical Practitioners, 2010). Collaborative Tuberculosis and HIV activities are essential to prevent, diagnose and treat TB among people with HIV and HIV among TB patients, for an optimal patient care (Harries, 1997). In recent years, the implementation of collaborative TB and HIV activities has been rising globally like, diagnostic referral of suspect patients and well monitored treatment regimen for both the diseases. This has created the need for additional research in the areas of quality and integrated services for TB and HIV prevention, treatment and care and also aims to prevent mortality and morbidity. In this study, we have made an attempt to find out the trends of HIV and TB co-infection and socio-demographic and clinical profile of HIV and TB co-infected patients.

MATERIALS AND METHODS

A hospital based descriptive study was done at Kasturba Medical College Hospital, Attavar, Mangalore, India after obtaining the approval from Institutional Ethics Committee. Permission was obtained from the Medical Superintendent of the hospital to access the registries of the HIV-TB co-infected patients from the medical records department. A data capture sheet was prepared after reviewing a few relevant published literature and case files of HIV-TB co-infected patients from case records. The hospital records of all HIV-TB co-infected patients admitted between January 2008 and December 2013 were reviewed and the information pertaining to socio-demographic and clinical characteristics of all the HIV-TB co-infected patients admitted during the study period were captured in data capture sheet. The data obtained was analysed using SPSS version 11.5 and the results were expressed in proportions.

Results

Table 1: Trend of clients attending ICTC and HIV positives from 2001 to 2013

Year	Number of subjects attended ICTC	HIV positive patients	
		Number	%
2001	0608	157	25.80
2002	1907	359	18.80
2003	1756	395	22.40
2004	2309	476	20.60
2005	2397	547	22.80
2006	0981	368	37.50
2007	1444	312	21.60
2008	2565	213	08.30
2009	1908	181	09.40
2010	2302	176	07.40
2011	2334	168	07.10
2012	2151	209	09.70
2013	2678	137	05.10

Table 1 shows the total number of clients attending ICTC of KMC Hospital and the proportions of HIV positive among them for the year 2001 to 2013. It is observed that there has been a steady decline in HIV positive cases from 2001 to 2013, except in 2006, where there was a spike of HIV positive cases, which was up to 37.5%. Proportion of HIV positive cases among ICTC clients ranged from 5.1% to 37.5%.

The proportion of TB infection among HIV positive patients ranged from 6.5% to 17.3% from the year 2008 to 2013. The details are presented in Table 2.

Table 2: Proportion of Tuberculosis co-infected HIV positive cases from 2008 to 2013

Year	Number of HIV positive cases	HIV positive cases co infected with tuberculosis	
		Number	%
2008	213	14	06.50
2009	181	27	14.90
2010	176	15	08.50
2011	168	29	17.30
2012	209	25	11.90
2013	137	09	06.60

When the baseline characteristics of the HIV-TB co-infected patients were analysed, it was observed that majority of them were aged below 40 years (n=50, 56.80%) followed by patients aged between 41 to 60 years (n=36, 40.90%) and those aged over 60 years (n=02, 2.30%). More than half of them (n=61, 69.30%) were males and the remaining were females (n=27, 30.70%). Most of the HIV-TB co-infected patients had education up to primary level (n=64, 72.70%) and nearly one fourth of them had education till secondary level (n=21, 23.90%). When the HIV-TB co-infected patients were stratified according to different occupational settings, it was seen that half of the patients were daily wage earners (n=44, 50.00%) whereas 29.50% (n=26) were housewives. Majority of the patients were married (n=80, 90.90%). Socio-demographic characteristics of the HIV-TB co- infected patients from the year 2008 to 2011 are depicted in Table 3.

Table 3: Socio-demographic characteristics of HIV-TB co-infected patients from the year 2008 to 2011 (n=88).

Characteristics		HIV positive with TB co-infection cases	
		N	%
Age (Years)	≤40	50	56.80
	41-60	36	40.90
	>60	02	02.30
Gender	Male	61	69.30
	Female	27	30.70
Education	Primary	64	72.70
	Secondary	21	23.90
	College and above	01	01.10
	Illiterate	02	02.30
Occupation	Daily wages	44	50.00
	Salaried	03	03.50
	Housewife	26	29.50
	Business	12	13.60
	Unemployed	03	03.40
Marital status	Married	80	90.90
	Single	05	05.70
	Widowed	03	03.40

Clinical profile of HIV-TB co-infected patients from the year 2008 to 2011 is shown in Table 4.

Heterosexual route was found to be the most common mode of HIV transmission among the HIV-TB co-infected patients (n=87, 98.90%). Around 50% of the co-infected cases were found to have extra-pulmonary tuberculosis (n=44). It is obvious that 68.20% of the co-infected cases (n=60) were not on anti-retroviral treatment while most of the co-infected cases (n=79, 89.80%) were on anti-tubercular treatment.

Table 4: Clinical profile of HIV-TB co -infected patients from the year 2008 to 2011 (n=88)

Clinical Profile		HIV positive with TB co-infection cases	
		N	%
Mode of HIV transmission	Homosexual	01	01.10
	Heterosexual	87	98.90
Type of Tuberculosis	Pulmonary	41	46.60
	Extra pulmonary	44	0500
	Data not available	03	03.40
On Anti Retroviral Therapy (ART)	Yes	20	22.70
	No	60	68.20
	Data not available	08	09.10
On Anti-tubercular treatment (ATT)	Yes	79	89.80
	No	00	0.00
	Data not available	09	10.20

DISCUSSION

The present study has shown that the number of HIV positive cases attending ICTC was stable between 2001 to 2005 and a rise was seen in the year 2006 followed by reduction in the number of cases from 2007 to 2013. An observation similar to the above findings was made in the study conducted in Tamilnadu and Andhra Pradesh (Kommula, et al., 2012; Sekar, et al., 2013). In the present study it was observed that the proportion of TB infection among HIV positive patients ranged from 6.50% to 17.30% between 2008 to 2013, which is in line with the systemic review and meta-analysis done in China identifying that the prevalence of HIV-TB co-infection in Asian countries was 20.11% (95%CI 13.82–26.39) (Gao, Zheng and Fu, 2013). When the sex distribution of HIV-TB co-infection was analysed, the present study revealed that co-infection was more prevalent among males, which is corroborated by a study conducted in Mainland China wherein similar result was observed (Gao, et al. 2010). The co-infection was found to be more prevalent in married

subjects (90.90%) in comparison to single (5.70%) and widowed subjects (3.40%). A study conducted in Northern Nigeria also showed that the co-infection was more prevalent (67%) among married subjects than others (Iliyasu and Babashani, 2009). Heterosexual route was found to be a major mode of transmission of HIV infection (98.90%) among co-infected cases in the present study. In a study done in Gujarat, heterosexual route was found to be the major risk factor in co-infected patients (Patel, Thakrar and Ghanchi, 2011). It is observed from the present study that about 50% of the co-infected cases were found to have extra-pulmonary tuberculosis, 89.80% were on anti-tubercular treatment and only 22.70% of the co-infected cases were on ART. A study conducted in Gujarat also showed that extra-pulmonary tuberculosis was more prevalent in co-infected patients (Ragini, et al., 2009). Another study conducted in Shimla also showed that the prevalence of extra-pulmonary tuberculosis is more in co-infected cases (Sharma, et al., 2005).

CONCLUSION

Even though the trend of HIV-TB co-infection is on decline, sustained efforts are needed to detect and treat tuberculosis among HIV infected patients to curb the dual menace of HIV-TB epidemic.

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