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Original article

Age, sex, race, geographical influence and clinical outcome in patients of hiv co-infection with tuberculosis

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ABSTRACT

Infection with HIV results in progressive immunodeficiency and renders the infected person increasingly vulnerable to wide range of pathogens. The immune defects produced by HIV influence the natural history of tuberculosis infection. Study aimed to determine incidence of HIV in case of tuberculosis (pulmonary and extra pulmonary) and to compare our data with the studies carried out in different parts of India. Total 129 patients of tuberculosis studied out of them 17 were reported seropositive for HIV. Highest incidence were among males 16(17.5%), whereas age group at most affected were of 31-40 years. Maximum cases of TB with HIV seropositive belonged to Urban Population 12 (13.9%) than the rural 05 (11.6%). While occupation did not showed any significant relation with the seropositive HIV, however highest incidences were among truck drivers, followed by businessmen, service person etc.

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1.Introduction:

Tuberculosis continues to remain even today a major public health problem in much of the developing world¹. This is in part due to the 1960s and to poorly managed and ill-focused, National tuberculosis control programmes. The problem is now further complicated by relentless spread of the human immunodeficiency virus (HIV) which cause acquired immunodeficiency syndrome (AIDS) pandemic and the emergence of multidrug-resistant strains (contributed to a large extent by HIV the pandemic)^{2,3,4}

From a mysterious illness recognized only in the early 1980's, HIV/AIDS has established itself into a global pandemic in less than 20 years. The highest estimated adult HIV prevalence is found in Manipur (1.40%), followed by Andhra Pradesh (0.90%), Mizoram (0.81%), Nagaland (0.78%), Karnataka (0.63%) and Maharashtra (0.55%).

It is estimated that worldwide nearly 2 billion people (i.e, 1/3rd world population) are infected with Mycobacterium tuberculosis: 30 million are HIV infected and 5-6 million are dually infected with mycobacterium tuberculosis and HIV⁵.

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Around, 10% of T.B. patients are HIV seropositive with a maximum of 30% in African countries. The number of people coinfecting with TB and HIV in India is estimated to be almost 25% of the global burden, and is the highest in the world. The mortality of TB in HIV patients is 2 fold to 4 fold more than in HIV negative patients. TB also accelerates HIV infection by increasing viral load by five to seven fold. TB is not only the most common opportunistic infection, it also increases risk of other opportunistic infection.

Person with latent tuberculosis infection are asymptomatic and cannot spread tuberculosis to other. About 10% of otherwise healthy persons who have latent tuberculosis infection will have active tuberculosis disease at some time during their lives. Because of the progressive depression of cell mediated immunity (CMI) in patients with HIV disease may be unable to limit the multiplication of Mycobacterium tuberculosis after initial dissemination and thus HIV infected persons may have involvement of multiple sites. More commonly, HIV infected patients with dormant tuberculosis infection will have reactivation of the latent infection because of diminished CMI.

Present study conducted to record incidence of HIV co-infection with tuberculosis and to compare data with studies carried out in different parts of India. Extensive spectrum analysis on regional and occupational basis of TB patients with HIV.

2. Material and Methods

Study on the screening of TB patients of greater Gwalior region for HIV was carried out during the period of one year at tertiary care centre.

The blood samples were collected chiefly from patients admitted in TB Medical Wards and patients attending outpatient department of tertiary care centre. Total 129 TB patients were finally enrolled for the study. These TB patients were selected on following basis:-

1. Patients who were not having any other metabolic disorders like Diabetes, Thyroidism, Cardiac problems.
2. Patients having any one of the positive finding (on X-ray, sputum smear, FNAC, Histopathological Examination).

Following investigations has been done :

1.ELISA Test for HIV detection

Kit manufactured by Bio Standard Diagnostics Pvt. Ltd.⁶

2.AFB (Zeihl Neelson Stain)

3.Giemsa staining for FNAC

4.Haematoxylin and Eosin staining for Histopathological examination of biopsies submitted.

3. Result

Table 1. Distribution of cases according to HIV status regarding seropositivity and seronegativity

HIV Status	Total No. of Cases
Seropositive	17 (13.2%)
Seronegative	112 (86.8%)
Total	129 (100%)

Table 2. Sex wise distribution of 129 TB cases with HIV status

Sex	Total	HIV	
		Seropositive	Seronegative
Male	91 (70.5%)	16 (17.5%)	75 (82.4%)
Female	38 (29.5%)	1 (2.6%)	37 (97.3%)
Total	129 (100%)		

Table 3. Age wise distribution of 129 tuberculosis patients with HIV

Age (Years)	Total	HIV	
		Seropositive	Seronegative
< 20	22 (17%)	0 (0%)	22 (100%)
21-30	34 (26.3%)	4 (11.7%)	30 (88.2%)
31-40	43 (33.3%)	10 (23.2%)	33 (76.7%)
41-50	20 (15.5%)	3 (15.0%)	17 (85%)
51-60	6 (4.7%)	0	6 (100%)
> 60	4 (3.1%)	0	4 (100%)
Total	129 (100%)		

Table 4. Sex wise rural and urban distribution of cases

Sex Wise Rural / Urban	Total	HIV	
		Seropositive	Seronegative
Rural	43 (33.3%)	5 (11.6%)	38 (88.8%)
Male		5 (100%)	31 (81.5%)
Female		0 (0%)	7 (18.5%)
Urban	86 (66.7%)	12 (13.9%)	74 (86.04%)
Male		11 (91.6%)	60 (81.08%)
Female		1 (8.4%)	14 (18.9%)
Total	129 (100%)		

Table 5. Seropositive and seronegative status of HIV in 129 TB patients according to occupation

Occupation	Total	HIV	
		Seropositive	Seronegative
Truck Driver	5 (3.8%)	3 (60%)	2 (40%)
Labourer	26 (20.1%)	2 (7.6%)	24 (92.3%)
Farmer	15 (11.6%)	1 (6.6%)	14 (93.3%)
Businessmen	17 (13.2%)	5 (29.4%)	12 (70.5%)
Service	16 (12.4%)	2 (12.5%)	14 (87.5%)
Student	15 (11.6%)	1 (6.6%)	14 (93.3%)
Housewife	24 (18.6%)	1 (4.1%)	23 (95.8%)
Others	11 (8.5%)	2 (18.1%)	9 (81.8%)
Total	129 (100%)		

3. Discussion

The incidence of HIV co-infection with tuberculosis varies from 0.5% in Delhi⁷ to 37.8% in Imphal⁸. The present study showed incidence of 13.1% in Gwalior region, which is almost similar to 12.1% incidence in Pune⁹, and 15.28% incidence in Mumbai¹⁰

Out of 91 (70.5%) male, 16 (17.5%) were seropositive whereas among females out of 38 (29.5%), 1 (2.6%) were seropositive. Many workers K.C. Khare¹¹, S. Tripathi et al.¹², S.K. Agarwal et al.¹³, Ravi Mehrotra et al.⁵ found a higher seroprevalence in males as compared to females.

The high seroprevalence of HIV infection in male tuberculosis patients could be due to the fact that number of women seeking admission in the hospitals (Indian set up), are generally low due to poverty, ignorance and lesser importance been given to disease in women as compared to men. Secondly a unique characteristic is that males in many families work outside for their livelihood and get more exposed to commercial sex workers and drug addiction.

When age wise distribution were studied higher incidence of seropositive reported were of age group 31-40 with 10 (23.2%) cases, S. Tripathi et al.¹² who reported 19.6%, 17.2%, 18.1% in 21-30 years, 31-40 year and 41-50 year age group in females respectively and 34.4%, 48.2%, 32.2% incidence in the age group 21-30 year, 31-40 year, 41-50 year in males respectively. However Hussain T et al.¹⁴ in Agra showed very high incidence of 90.9% in 21-40 year age group.

When area wise distribution were studied maximum of seropositive incidence were of Urban population 12 (13.9%) as compared to rural 05 (11.6%).

Study findings suggest that dual infection is more commonly seen in high risk groups. Many people are working outside their families and are more exposed to sexual promiscuity. Co-infection of HIV in tuberculosis epidemic continues to result in high tubercular morbidity. These patients many of whom have Multi Drug Resistant tuberculosis are potential source of dreaded form of tuberculosis which is difficult to treat. This is therefore another reason for identifying dually infected people early and treating them vigorously.

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