



**ORIGINAL RESEARCH PAPER**

**Medicine**

**A STUDY OF CLINICAL PROFILE OF TUBERCULOSIS IN PATIENTS WITH HIV INFECTION/AIDS**

**KEY WORDS:** Human immunodeficiency virus; Acquired immunodeficiency syndrome; Tuberculosis

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**ABSTRACT**

Tuberculosis (TB) and HIV co-infections place an immense burden on health care systems and pose particular diagnostic and therapeutic challenges. Infection with HIV is the most powerful known risk factor predisposing for Mycobacterium tuberculosis infection and progression to active disease, which increases the risk of latent TB reactivation 20-fold. TB is also the most common cause of AIDS-related death. A study was carried out to study the clinical, bacteriological and radiological features of HIV/TB patients. Over the period of two years, a total of 100 tuberculosis patients were suspected to have HIV/AIDS co-infection, and upon testing, 16 patients were found to be HIV seropositive. Most of the study patients were manual labourers followed by truck drivers. Heterosexual promiscuous behaviour was found to be a major risk factor in HIV transmission. The most common symptom in these patients was cough and expectoration, followed by fever and weight loss. Acid-fast bacilli (AFB) smear positivity was found in 18.75% patients. On chest skiagram, infiltrative lesions were commonly seen in 56.25% patients. Extra-pulmonary tubercular manifestations were seen in 43.75% of HIV/TB cases.

**INTRODUCTION**

Tuberculosis (TB) and human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) constitute the main burden of infectious diseases in resource-limited countries. Estimates by the World Health Organization (WHO) indicate that there are more than 9 million new active cases of TB and close to 2 million deaths per year, and that 2.6 million new cases of HIV infection and 1.8 million AIDS-related deaths occur every year. Mycobacterium tuberculosis-HIV co-infections pose particular diagnostic and therapeutic challenges and exert immense pressure on health care systems in Asian countries with large populations of co-infected individuals.

By producing a progressive decline in cell-mediated immunity, HIV alters the pathogenesis of TB, greatly increasing the risk of disease from TB in HIV-coinfected individuals and leading to more frequent extrapulmonary involvement, atypical radiographic manifestations, and paucibacillary disease.

Diagnosis of TB in HIV infected patients may be delayed because of atypical clinical presentation and involvement of inaccessible sites and low sputum smear positivity. HIV-infected individuals have an extraordinarily high risk of developing clinical TB gives cause for serious concern as the implications are most serious.

In persons dually infected with HIV and tuberculosis, the lifetime risk of developing tuberculosis is 50%–70% as compared to a 10% risk in HIV negative individuals. Due to this relationship there has been a dramatic increase in the incidence of tuberculosis in countries with high prevalence of HIV and tuberculosis.

In India, 56% of AIDS patients have been reported to be suffering from TB. Thus, because of very important association between TB and AIDS, it has become necessary to look for tuberculosis in HIV infected individuals and vice versa. The present study was carried out on hospitalized TB patients who were screened for HIV co-infection on the basis of presence of one or more risk factors for HIV/AIDS.

**MATERIAL AND METHODS**

The study was conducted on patients of Patna Medical College and Hospital during the period from July 2016 to June 2018.

Based on the strong suspicion of HIV/AIDS infection e.g. presence of significant weight loss, prolonged fever, chronic diarrhoea, oropharyngeal candidiasis etc. along with history of

known risk factors like promiscuous sexual behaviour, i.v. drug abuse, or previous blood transfusion. 100 patients in this period were subjected to screening tests for anti-HIV antibodies (TRIDOT), after pretest counselling and informed consent. Confirmation of the positive screening results was obtained by Western Blot.

A detailed clinical history and complete general physical and systemic examination findings of HIV/TB patients were recorded. Besides routine blood examination, sputum was examined for acid-fast bacilli and pyogenic organisms.

In case of extrapulmonary tuberculosis relevant samples were obtained for mycobacterial and histopathological examinations. For lymph node TB, the diagnosis was based on FBAC/Biopsy cytopathology and/or microbiological evidence of tuberculosis. Pleural effusion was diagnosed on biochemical, microbiological and cytological characteristics of pleural tap. In cases of meningitis, lumbar puncture was done.

In patients where no definitive diagnosis could be established, signs of improvement after initiating Anti-Tubercular treatment was noted. For diagnosis of other opportunistic infections, other appropriate tests were carried out

**RESULTS**

The study involved a total of 100 tuberculosis patients with a strong suspicion of HIV/AIDS co-infection. Out of these, sixteen patients were found to be HIV seropositives. Out of these 16 patients, most of the patients (10, 62.5%) belonged to the age group 21–40 years, while three patients (18.75%) were less than 20 years and one patient (6.25%) was more than 60 years of age. Two patients (12.5%) fell in the 41–60 age range. In all, there were fourteen males (87.5%) and two females (12.5%).

**TABLE 1: AGE DISTRIBUTION AMONG ADMITTED HIV/TB**

Age group(in years)	No. of patients	%of patients(n=16)
<20	3	18.75%
21-40	10	62.5%
41-60	2	12.5%
>60	1	6.25%

Majority of the patients were manual labourers (7, 43.75%) while truck drivers and farmers accounted for 4 patients (25%) and 2 patient (12.5%) respectively. One patient was a rickshaw puller. All the females were housewives (12.5%).

**TABLE 2:JOB DISTRIBUTION OF PATIENTS ADMITTED WITH HIV/TB**

Job distribution	No.of patients	% of patients
Manual labourers	7	43.75%
Truck drivers	4	25%
Farmers	2	12.5%
Rickshaw puller	1	6.25%
Housewife	2	12.5%

All the patients in the study group had a history of heterosexual contact,except one who had a history of illicit drug use through i.v. route.All the four females gave history of their partners being involved in promiscuity.

Tuberculin anergy(<5mm induratio to 1TU PPD) was observed in 14(87.5%) patients.Rest two patients had positive tuberculin reactivity(>5mm induration to 1TU PPD).Out of these two patients,one patient(6.25%) had positivity in the range of 10-14mm .

Cough and expectoration were the most common symptoms observed in 93.7% patients ,while 87.5% of the patients had a low grade fever with night sweats,and anorexia with significant weight loss(>10% of the total body weight) was observed in 75% of the patients.Hemoptysis,diarrhoea and peripheral lymphadenopathy were observed in 5(31.25%),7(43.75%) and 2(12.5%),respectively. Oral thrush was observed in 4(25%) and skin rashes in 1(6.25%) patient.Neurological symptoms (headache,altered sensorium,seizures,etc) were reported by one(6.25%) patient.

The mean duration of the most common presenting symptom (cough) was 12 weeks while fever and weight loss had mean duration of about 14 and 12 weeks, respectively, at the time of presentation. Mean duration of anorexia was 15 weeks. The average (mean) duration of symptoms at the time of presentation was 12.2 weeks, which is in overall suggestive of late presentation and contributing to the delay in the diagnosis of TB. The duration of illness in the present study ranged from 2 weeks to 2 years.

**TABLE 2:DISTRIBUTION OF SYMPTOMS IN ADMITTED HIV/TB PATIENTS**

SYMPTOMS OBSERVED	NO OF PATIENTS	%OF PATIENTS(n=16)
Cough and expectoration	15	93.75%
Fever with night sweats	14	87.5%
Anorexia and weight loss	12	75%
Hemoptysis	5	31.25%
Diarrhoea	7	43.75%
Peripheral lymphadenopathy	2	12.5%
Oral thrush	4	25%
Skin rashes	1	6.25%
Neurological symptoms	1	6.25%

Direct smear examination for AFB in sputum specimens was positive in 18.75%(3 patients),while the rest (81.25%;13 patients) were smear negative.One patient had pyogenic organism isolated in his sputum.

**TABLE 3:SPUTUM EXAMINATION RESULT IN HIV/TB PATIENTS**

ORGANISM ISOLATED	NO.OF PATIENTS	% OF PATIENTS (n-16)
AFB seen	3	18.75%
AFB not seen	13	81.25%
Pyogenic organism seen	1	6.25%

A total of 6(37.5%) of the HIV/TB cases had extra-pulmonary tubercular lesions. Four (25%)patients had extra-pulmonary lesions co-existent with pulmonary involvement.Out of the two patients without pulmonary evidence of tuberculosis,one patient(6.25%) had only intrathoracic lymphadenopathy and one patient(6.25%) had pleural effusion co-existent with cervical lymphadenopathy.

Peripheral lymphadenopathy was seen in two(12.5%) patients,intrathoracic in one(6.25%) and abdominal (peripancreatic and retroperitoneal) in one patient(6.25%).Pleural involvement was seen in one patients(6.25%).

A common associated infection seen was oral candidiasis that was observed in 4 patients(25%).Bacterial pneumonias were found in one (6.25%) patient co-existent with pulmonary tuberculosis.

**DISCUSSION**

After the detection and recognition of HIV in 1983, the declining curve of TB infection started to show a sudden rise during the 1990s. Coinfection with TB and HIV has already been reported as one of the most significant global public health concerns. Tuberculosis is the commonest opportunistic disease in HIV positive persons in India. HIV/AIDS pandemic has caused a resurgence of TB, resulting in increased morbidity and mortality worldwide. From the epidemiological point of view, our TB/HIV patients differed in some respects from those present in other parts of the world.Fortunately,tuberculosis in HIV/AIDS is curable as in immunocompetent hosts.

Most of our study group patients (62.5%) belonged to the age group of 21–40 years, which is the sexually active age and is also the most productive in one's life. Of all the detected patients, 87.5% were males and the rest were females. The striking male predominance noted in the present study has also been reported in other studies. The occupational profile of our patients revealed that a majority of them were manual labourers and truck drivers followed by farmers. Mohanty et al.\_reported 36.8% patients working as manual laborers while Rajsekaran et al.\_found majority (55.6) of patients working as farmer. Other authors\_have found sero-positivity rate was highest among those who were unemployed (40%) followed by the business professionals (35%). The percentage of the professions is thus seen to vary in different studies, largely due to the differences in the occupational patterns and the source from where the patients were selected.

Sexual route (heterosexual) was found to be the major risk factor (93.75%) while only one patient was an intravenous drug abuser in our study. Heterosexual promiscuity and casual sex was found to be a major risk factor in the studies by some Indian observers,while others\_observed that the majority of their cases were intravenous drug abusers (68.9%).

The average duration of symptoms was 12.2 weeks, indicating that there was a delay in diagnosing tuberculosis and starting treatment. Whether the delay was at the patient or provider level needs further investigation. The duration of illness in our patients ranged from 2 weeks to 2 years. Swaminathan et al. found that the duration of illness in their cases before seeking treatment was 12 weeks.

Tuberculin test positivity (>10 mm) to 1TU PPD was observed in 6.25% patients in our study. Other authors have reported a wide variation in tuberculin test positivity. Positive response to tuberculin is generally retained early in the course of HIV infection. The most common symptom was cough in 15(93.75%) patients, while fever was present in 14 (87.5%) and weight loss in 12 (75%) patients. In the series reported by Mohanty et al. fever was the most common complaint, while Deivanayagam et al. reported cough with expectoration in majority of their patients.

Three (18.75%) of our patients had sputum smear for AFB positive. This is very different from the situation in HIV uninfected tuberculosis patients and indicates that smear microscopy is not a sensitive diagnostic tool in the presence of HIV infection. Mohanty et al. has reported 31.59% while Deivanayagam et al.\_ has reported 15% patients as smear positive. It has been shown that sputum smear is often positive in the early stage of HIV infection.

Extra-pulmonary tuberculosis is more common in HIV/TB patients, especially with advanced immunosuppression than in non-HIV/TB patients.\_Extra-pulmonary tuberculosis was seen in 6 (37.5%) of our HIV/TB patients. Most common form of extra-pulmonary TB

was mediastinal lymphadenopathy and pleural effusion. Overall involvement of lymphatic system was seen in 2 (12.5%) patients. Other authors have also observed that lymphatic system is the most commonly involved, followed by pleural involvement in HIV/TB patients.

4 (66.66%) out of 6 PTB patients had an associated extra-pulmonary focus, and two patients with extra-pulmonary TB had multisystem involvement which is pointing to the disseminated nature of the disease in HIV positive.

We conclude that HIV/TB coinfection is more common in sexually active age group and heterosexual transfer is the commonest mode of HIV infection. Sputum smear AFB and Mantoux test positivity is low in TB patients having HIV. Disseminated TB is common in HIV and lymph nodes are common site among extra-pulmonary tuberculosis.

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