Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

To Find Out Prevalence of Extra Pulmonary Tuberculosis (EPTB) In Patients with Human Immunodeficiency Virus (HIV) Infection

Vishal Singh Thakur[1], Prabhat Singh[2], Karan Gandotra[3]

[1]Senior Resident, GMC Jammu, India.
[2]Senior Resident, GMC Jammu, India.
[3]Senior Resident, GMC Jammu, India.

Received Date: 10/07/2023 Acceptance Date: 04/08/2023

Abstract

Background: INDIA has significant Tb burden. HIV positive people account for 10-13%of Tb cases. TB pandemic is being fuelled by HIV epidemic. The purpose of this research was to estimate the prevalence of extrapulmonary TB co infection with HIV in an understudied community in northern India. After receiving ethical approval we conducted study on adults HIV infected patients of either sex with extrapulmonary tuberculosis who attended ART centre, OPD, and admitted in GMC Jammu. Total 200 patients were out of which 24 patients having EPTB. Out of 24 patients 7 had tubercular effusion (29.17%). 8 had tubercular lymphadenopathy (33.33)%. 5 had abdominal tuberculosis (20.83), 4 had different form of EPTB including 2 with TB meningitis 1 with Tb pericardial effusion. Hence showing high prevalence of TB Lymphadenopathy and tubercular effusion in HIV Patients

Keywords: *Tuberculosis, Mycobacterium tuberculosis, HIV/AIDS, pulmonary TB, extrapulmonary TB.*

Corresponding Author: Dr Karan Gandotra, Senior Resident GMC Jammu, India.

Introduction

A prominent global source of disease and death in humans is tuberculosis (TB). PTB, or pulmonary tuberculosis, is the most common kind of TB caused by Mycobacterium tuberculosis complex organisms (MTBC), however extrapulmonary tuberculosis may also occur (EPTB). Meningitis, lymphadenitis, ophthalmic, oral, pleuritis, pericarditis, peritonitis, musculoskeletal, abdominal, genitourinary, and miliary types of tuberculosis are common clinical presentations of EPTB. In 2019, there were 7.5 million incident cases globally, and EPTB cases made about 16% of them [1]. EPTB can be primary (at the site of initial infection) or secondary (disseminated), and the latter is typically brought on by hematogenous or lymphatic spread of bacteria from the primary organ, reactivation of latent TB (LTBI), consumption of infected sputum, or local spread from adjacent organs [2,3]. It is difficult to identify and treat EPTB. In most instances, constitutive symptoms such fever, weight loss, night sweats, or malaise are present along with particular systemic symptoms according on the afflicted organ. Radiologic imaging of the diseased organs is often performed on symptomatic patients in order to assess and design a more precise and focused diagnostic test. In order to begin an effective course of therapy, the extrapulmonary sample acquired during fine-needle aspiration or biopsy is often utilised for microscopy, histopathology, culture, biochemical/immunological, and molecular testing, including medication susceptibility [2,3,4].

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

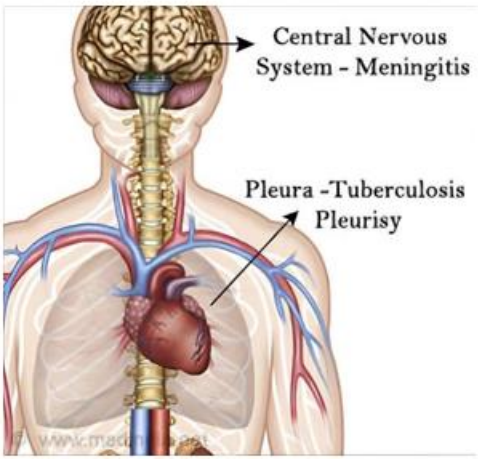

Figure 1: Extra Pulmonary Tuberculosis (EPTB)

Different tests used to detect EPTB have a wide range of sensitivity and specificity; in most situations, the clinical illness presentation should be taken into account while selecting and interpreting a particular diagnostic test. For drug-sensitive and drug-resistant patients, the treatment plan for EPTB is the same as that for PTB; however, involvement of the brain or bones necessitates a longer course of therapy than PTB. Given the clinical importance of EPTB, it is essential to provide a thorough and coherent discussion of the numerous diagnostic techniques, therapeutic alternatives, and management issues that come with these poorly known disorders. With a focus on the growing tide of drug-resistant variants of EPTB patients, we outline the most recent advancements in the diagnosis and treatment of EPTB in thisstudy.

37 years ago, the first AIDS cases were documented in the US. Since then, the infection has spread to over 77 million individuals, killing over 35 million people. There are now 36.9 million HIV-positive individuals worldwide, 1.8 million new infections, and approximately 1 million AIDS-related deaths per year [1]. For the purpose of comprehending, treating, and preventing HIV infection, enormous amounts of scientific funding have been allocated. The National Institutes of Health (NIH), which invested almost $69 billion in AIDS research from fiscal years 1982 to 2018, is the leading sponsor of HIV/AIDS research.

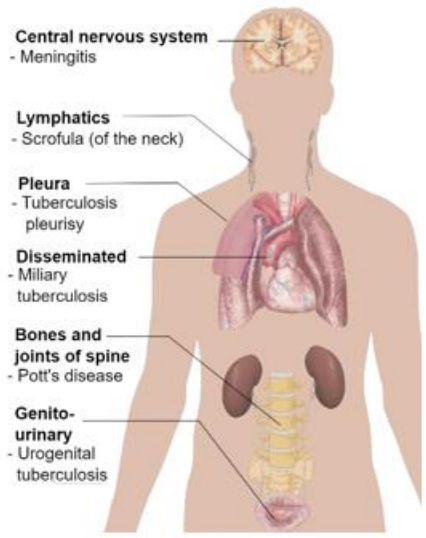

Figure 2: extrapulmonary tuberculosis symptoms

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

Despite the horrifying disease burden, funding in AIDS research have directly led to tremendous advancements in science. Since HIV has been researched so extensively throughout history, the biology and pathophysiology of viruses have been well analysed. However, the field of antiretroviral treatment has seen the most significant advancements in HIV/AIDS research. Before the development of these life-saving medications, AIDS was an almost always deadly illness. The lives of people living with HIV have been transformed since it was shown in 1987 that a single drug, zidovudine, also known as azidothymidine or AZT, could temporarily and partially suppress virus replication [2]. Today, there are more than 30 antiretroviral drugs available, and when taken in combinations of three drugs, now contained in a single daily pill, they can suppress the virus to undetectable levels. A person in their 20s who is infected today might expect to live an extra 50 years, giving them almost a normal life expectancy, provided they are given a combination of antiretroviral medications that almost always will durably reduce virus to below detectable levels [3]. A person on antiretroviral treatment who has an undetectable viral load will also not infect their sexual partner who is not infected. "Treatment as prevention" is the name of this approach [4]. Additionally, administering a single tablet combining two antiviral medications and having that individual take it everyday reduces their risk of contracting HIV by more than 95%. A safe and effective HIV vaccine isfinally making significant progress [5].

Advances primarily connected to HIV/AIDS provide as a strong justification for and validation of the large expenditure in HIV research. However, this investment has had significant side benefits that go beyond HIV/AIDS, resulting in understandings and real advancements in other, unconnected, and unrelated disciplines of biological research and medicine.

Figure 3: HIV and AIDS

With a 35 percent contribution to the worldwide incidence of tuberculosis (TB), Southeast Asia is recognised as having the largest global TB burden. Five of Southeast Asia's 11 nations—Bangladesh, India, Indonesia, Myanmar, and Thailand—are among the 22 nations with the greatest TB burden [1]. In 2010, 9.4 million cases of TB were reported globally, with 2 million of those cases coming from India, according to a WHO study. Among the 22 nations with the highest TB incidence rates, India ranks 17th. A 2004 WHO survey rated tuberculosis (TB) as the seventh most common cause of death globally, contributing to 2.5% of all fatalities. A further estimate of 1.1 million (12%) of the 9.4 million TB cases that were identified in 2009 were human immunodeficiency virus (HIV) positive, with 78 percent of these cases occurring in Africa and 13 percent in Southeast Asia [2]. India, Indonesia, Myanmar, and Thailand are among the 41 nations with the greatest HIV-TB burden on the worldwide list [1].

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

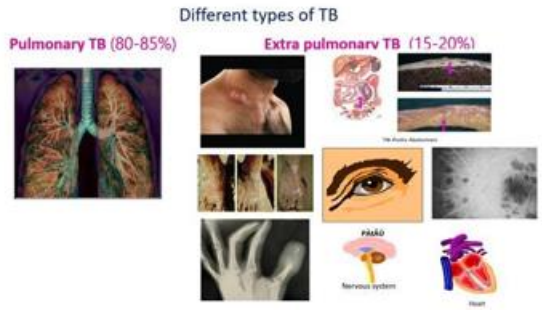

Figure 4: Different types of TB

Active TB is considerably more likely to occur in people who are HIV and TB positive. Each occurrence of drug-resistant tuberculosis and/or co-infection with HIV exacerbates the TB epidemic globally. The most significant risk factor for acquiring active TB illness from a latent TB infection is HIV infection, and TB is a major cause of mortality in HIV- infected individuals [2].

If we take into account the prevalence of HIV—TB co- infection globally, Sub-Saharan Africa has a prevalence of around 41.2 percent [3], but the prevalence in Kenya was 44 percent in 2009 [4]. The frequency of co-infection is, however, very modest (0.5 percent) in China [5]. Additionally, 8.2 percent of Vietnamese people had co- infections in 2010 [7], and 9 percent of TB patients in the United States in 2005 [6] were HIV positive. While central European nations have reported a lower prevalence (0–1 percent), France, Iceland, and Portugal have recorded co- infection prevalences of around 11–15 percent among European nations [8].

Information about co-infection is still lacking in India. According to reports from the following states and cities: Delhi (9), Tamil Nadu (10, 11), Maharashtra (Mumbai (12), Pune (13), Jammu and Kashmir (14), Madhya Pradesh (Indore) (15), Uttar Pradesh (Aligarh (16), Lucknow (17),

Karnataka (Mangalore (18), and Pondicherry (19), prevalences range from 1 percent to roughly 30 percent.

It is crucial to understand the incidence of HIV-positive infection in people with active TB since it is increasingly understood that knowing this information will promote planning and could even be required for choosing the best treatment approach. As the HIV pandemic continues to feed the worldwide TB epidemic, more and more people are realising the need of HIV monitoring in TB patients. The incidence of HIV among TB patients is a sensitive indication of the spread of HIV in several locations. To react with a growing commitment to providing comprehensive HIV/AIDS treatment and support, including anti-retroviral therapy (ART), to HIV-positive TB patients, knowledge on the HIV prevalence in individuals with the disease is crucial. Currently, the majority of HIV infections are not being diagnosed, despite the fact that TB cases are increasing in the majority of locations. Only those who have access to quality healthcare services are currently aware of how the two epidemics interact in a particular location [1]. In order to ascertain the incidence of HIV—TB co-infection in patients among a less well-studied population in Eastern India, this research was designed to also look at the distribution of HIV- positive cases among patients with pulmonary TB and extrapulmonary TB (EPTB). Along with a comparison analysis of multiple past research, the report also covers the diverse clinical manifestations among these co-infected individuals.

Literature Review

Shafer RW *et al.* [5] 43 percent (199) of 464 consecutive patients with extra pulmonary TB were infected with the human immunodeficiency virus, according to their 6-year case-control

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

research on extra pulmonary tuberculosis in individuals with HIV (HIV). HIV-positive individuals had a higher likelihood of having disseminated, genitourinary, intra-abdominal, mediastinal, or concomitant pulmonary TB than HIV-negative patients did. The majority of the HIV- positive individuals had fever, but only around one-third of the control patients did not. HIV infection patients who were left untreated had fast and almost often deadly disease progression. The response to therapy among HIV-positive individuals who received treatment was comparable to that of the control patients. Although tuberculosis was widely disseminated among HIV-positive people, the diagnosis of TB was challenging and sometimes delayed. The authors recommended that additional HIV-related diseases should be taken into account in the differential diagnosis in addition to the reduction in tuberculin reactivity and the unusual chest radiograph patterns. Less than 50% of HIV-infected individuals had positive sputum AFB stains, despite the fact that more than 90% of the patients whose sputum samples had M. tuberculosis. 56 and 77 percent, respectively, of the HIV-infected individuals from whom these specimens were taken had positive blood and urine specimen cultures. Nearly all patients with involvement of these locations had aberrant cerebrospinal fluid and pleural fluid, although these samples were seldom AFB-positive and were thus merely suggestive of TB. The best instant diagnostic yields were achieved with rates between 50% and 90% with procedures such bone marrow aspirates, liver biopsies, and aspirates of visceral lymph nodes, liver, and peripheral lymph nodes.

Barthwal MC *et al.* [11] examined the individuals with HIV infection who had an extra pulmonary TB clinical profile. Workup procedures included a history review, physical examination, sputum testing for acid-fast bacteria, chest X- ray, abdominal ultrasound, fine needle aspiration cytology, trans bronchial needle aspiration, and computed tomography. There were 50 instances, all of them were male and had a mean age of 35. 26 people (52 percent) had pulmonary TB, whereas 24 people (48 percent) did not. 41 (82%) of the cases had a widespread illness, while 9 (18%) only affected one location. In patients without pulmonary TB, fever and weight loss were the most prevalent symptoms (respectively, 79 percent and 58 percent). The lymph node was the most common extrapulmonary location, accounting for 46 (92%) of all cases, followed by the spleen (26%) and the pleura (9%) and the miliary (7%) and the liver (1%). (2 percent). In 30 of the 50 patients (60%) [FNAC in 23 (88%); TBNA in 2 (25%); and pleural biopsy in 5 (55%)] the diagnosis was confirmed by invasive means.

Kipp AM *et al.* [14] conducted a case-control study including 6,124 TB patients over a 13-year period. A total of 1,366 (22.3%) patients with EPTB and 563 (9.2%) patients with HIV co-infection had tuberculosis overall. Pleura (25.1 percent) and cervical lymph nodes were the locations of illness that were most often present (15.7 percent). Comparatively to HIV-uninfected people, HIV co-infected people were more likely to develop miliary illness or non- cervical lymph node disease.

Clevenbergh P *et al.* [16] examined the clinical and epidemiological features of lymph node tuberculosis (LNTB) in individuals with varied loads of HIV infection and tuberculosis. 92 patients were included in the analysis of this 9-year retrospective research. Individuals with HIV co- infection had a greater probability of hospitalization and presenting with disseminated TB and systemic symptoms than patients without HIV. When samples were cultivated, lymph node diagnostic methods had a high yield. About 25% of patients exhibited abnormal chest radiographs, and the majority of them tested positive for Mycobacterium TB culture or acid-fast bacilli on sputum smears. The authors came to the conclusion that LNTB is typically a clinical indicator of a widespread infection and that it is essential to culture M. tuberculosis from lymph nodes or other locations for a correct diagnosis. Adopting the Directly Observed Treatment, Short Course (DOTS) approach might lower the default and non-adherence rates.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

Leeds IL *et al.* [20] Identify the risk factors for certain forms of EPTB. The research looked back on 320 EPTB cases from a single metropolitan US public hospital between 1995 and 2007. The majority of patients (67%) were male, and the average age ranged from 18 to 89. Lymphatic (28%) disseminated (23%) and CNS/meningeal (22%) illness were the most typical locations of EPTB. A total of 154 patients (48.1%) had HIV infection, 40% also had pulmonary tuberculosis, and 14.7% passed away within a year of their EPTB diagnosis. Patients with CD4 lymphocyte cell counts below 100 who also had HIV infection were more likely to develop severe types of EPTB (CNS/meningeal and/or disseminated).

Namme LH *et al.* [21] In a group of patients receiving treatment for tuberculosis, it was established the incidence of extra pulmonary tuberculosis (EPTB), the different organ locations affected, and their connection with HIV infection. For four years, this cross-sectional investigation was carried out. The overall prevalence of HIV was 41.5 percent among the 749 individuals who were registered for anti-TB medication. 42.9 percent of people (n=321) had EPTB. 33.6 percent of individuals with EPTB had HIV infection. Bones and joints (29.6%), lymph nodes (17.8%), the pleura (15%), the peritoneum (14.3%), and the central nervous system and meninges (14.3%) were the disease areas most often afflicted (9 percent). Though less frequent, neuromeningeal TB was most strongly linked to HIV infection.

Singh G *et al.* [25] performed a descriptive cross-sectional research to investigate the distribution of EPTB in TB-HIV patients and to collect patient profiles. Out of 522 TB patients who also tested positive for HIV, 32.95 percent had EPTB. Almost all of the patients (84.3%) were men, aged between 18 and 40 (91.9%), and had some college experience (77.3 percent). The greatest risk factor for transmission was identified as intravenous drug use, which affected 60.5 percent of the individuals. The most frequent clinical symptom was an extended fever (63.4 percent). 34.9 percent of the participants had CD4+ counts under 50 cells/L and 34.9 percent had negative Acid Fast Bacilli (AFB) smear results. Peripheral lymph nodes were the location of extrapulmonaryTB most often (18 percent).

Sutariya SB *et al.* [26] conducted a research on 100 HIV- positive TB patients who were older than 18 and randomly chosen from a list received from an ART centre. In this research, the most frequent presenting symptoms were fever (91%), cough (65%), anorexia (62%), weight loss (61%),
diarrhoea (58%), and dyspnea (36 percent). 54 research participants had pulmonary TB, and 46 had extrapulmonary tuberculosis out of a total of 100 people. The most prevalent organ affected by extrapulmonary tuberculosis was the spleen (41%), followed by lymph nodes (39%), pleural effusion (12%), and meningitis (12%). (8 percent). The majority of pulmonary TB patients, 24, or 44.44 percent, had CD4 counts between 100 and 199 per mm3. The majority of extra pulmonary TB patients, 28 (60.87%), had CD4 counts between 100 and 199 per mm^3.

Tarekegne D *et al.* [28] examined the risk factors for HIV seropositivity and the prevalence of HIV infection in TB patients. 2005 patients—or 95.7%—of the 2096 total patients—had HIV testing done. The total incidence of HIV-TB co-infection was 20.1% (404), with men having a 12.3%
(246) and females having a 7.9 (158) infection rate. Patients between the ages of 25 and 34 were found to have the largest percentage of co-infections (32.4%), as were those with smear-negative pulmonary TB (59.7%). HIV-TB co- infection decreased throughout the course of the research from 22.1 percent (185) in 2009/10 to 12.8 percent (52) in 2011/12.

Gjergji M *et al.* [29] evaluated the TB traits in the HIV/AIDS patients. Studying 77 HIV/AIDS patients with pulmonary problems between 2004 and 2015 revealed 27 (32.2%) instances of TB, 23 (85.2%) cases of pulmonary tuberculosis, and 4 (14.2%) cases of generalised

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

tuberculosis. The average age of the subjects with pulmonary TB and generalised TB was 48.1 9.8 and 47.8 10.2 years, respectively. Males made
up 22 (95.7%) and 2 (50%) of the subjects with pulmonary
TB, while smokers made up 21 (91.3%) and 4 (100%) of the subjects with generalised TB, and urban residents made up 16 (69.6%) and 3 (75%) of the subjects with generalised TB (25
percent). 6.2, 2.2, and 4.2, respectively, and 5.3, 2.8, and 2.9, respectively, years after learning they had HIV. According to the CD4 cell count, 6 (26.1%) patients with pulmonary TB had 200-999 cells/ml, 8 (34.8%) had 100-199 cells/ml, 9 (39.1%) had less than 100 cells/ml, and all patients with generalised TB had less than 100 cells/ml. Cough was the only clinical sign of pulmonary tuberculosis (73.9%), expectoration was 43.5%, dyspnea was 34.8%, chest pain was 26.1%, haemoptysis was 26,1%, weight loss was 65.2%, fatigue was 87%, fever was 78.3%, and anorexia was 78.3%. Chest radiographs showed evidence of adenopathy in 5 (21.7%) cases and with CT in 7 Lesions were localised to the right lung in 5 (21.7%) instances, the left lung in 8 (34.8%) cases, and both lungs in 10 (bilateral) (43.5 percent). 13 (56.5%) examples of upper zone localization, 7 (30.4%) cases for middle zone, and 3 cases for lower zone (13 percent). During the course of the trial, 4 (17.4%) patients with pulmonary TB, 3 with 100-199 CD4 cells/ml, and 1 with 100 CD4 cells/ml, as well as 3 (75%) patients with generalised TB, all of whom had 100 CD4 cells/ml, passed away.

Gounden S *et al.* [27] did a retrospective record review of all adult patients who had received an EPTB diagnosis at a tertiary hospital during a three-month time frame. 188 new cases of TB were reported throughout the research period, and 80 of those individuals were found to have EPTB. The patients' average age was 34.73 years (SD: 9.44). 42 (52.5%) of the patients were female. HIV co-infection was the most typical risk factor for developing EPTB (88.8 percent). The CD4 cell count was 68 cells/mm3 on average (range: 32– 165). The most typical locations of disease involvement were the pleura (36.3%), lymph nodes (28.7%), and abdomen (27.5%). One of the most frequent symptoms described was weight loss, along with fever, night sweats, and cough. Only 65% of patients had a diagnosis that was microbiologically verified. To confirm the existence of TB in distant organs, more than one diagnostic technique was often performed. According to the study's findings, immunological suppression—most often caused by HIV—remains the biggest risk factor for the onset of EPTB. The diagnostic toolbox of EPTB has grown thanks to improvements in diagnostics methods. Antiretroviral medication has been more widely available recently, although severe HIV illness still poses a serious threat to TB control.

Kulchavenya E *et al.* [30] examined a cohort of 190 patients with extra pulmonary tuberculosis (EPTB) throughout time, 117 of whom had HIV co-infection (117, 61.6 percent) (73,
38.4 percent). CNS involvement was discovered in 73 (62.4%) of the 117 HIV-infected EPTB patients, while TB CNS was only discovered in 6 (8.2%) of the non-HIV- infected individuals. Urogenital TB (UGTB) was more prevalent in immune-competent individuals (21, 28.8%), whereas 3 patients with HIV had UGTB as a diagnosis (2.5 percent). While BJTB was detected in 14 (12%) of the HIV- infected EPTB patients, BJTB was discovered in 24 (32.9%) of the non-HIV-infected individuals. 13 HIV-positive individuals (11.1%) and 16 immunocompetent patients (16.0%) both had peripheral lymph node TB (21.9 percent).

Methodology

Following investigations were conducted:

- comprehensive blood image
- ESR
- testing for renal function

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

- testing for liver function
- Sputum smear and mycobacterium tuberculosis culture
- CD4 count
- radiological examinations (chest radiography, abdominal ultrasound, computed tomography, magnetic resonance imaging, etc.)
- Biopsy using fine needle aspiration cytology (FNAC) for histological investigations
- Additional investigations: where necessary, they were employed

Data was gathered, placed into an Excel spreadsheet, and then appropriately statistical methods were used to analyse it.

Study design:

After receiving approval from our institutional ethical committee, we conducted our study on adult HIV- infected patients of either sex with extrapulmonary tuberculosis who attended ART Center, OPD and admitted patients in (Department of Medicine) Government Medical College, Jammu for a one-year period (November 2018 through October 2019).

Selection of cases: At least 200 instances were collected. All HIV patients who met the study's inclusion and exclusion criteria were included.

Inclusion criteria:

- Over 18 years old.
- those who have HIV.

Exclusion criteria:.

- patients with pulmonary tuberculosis that is isolated(PTB)
- expecting mothers.
- Mental health patients

Enzyme immunoassay blood tests were used to diagnoseHIV infection.

Results

PREVALENCE OF EXTRA-PULMONARY TUBERCULOSIS IN HIV PATIENTS

Table 1

GROUP	NO. OF PATIENTS	ERCENTAGE OF PATIENTS
PATIENTS WITH EPTB	24	12%
PATIENTS WITHOUT EPTB	176	88%
TOTAL NO OF PATIENTS	200	100%

Table 1 shows: 24 individuals (12%) out of the 200 participants in the research had extrapulmonary tuberculosis (EPTB).

DIFFERENT TYPES OF EXTRAPULMONARY TUBERCULOSIS IN THE STUDY GROUP

Table 2

Type of EPTB	No. of Patients	Percentage of patients
Tubercular Lymphadenopathy	8	33.33
Tubercular pleural effusion	7	29.17
Abdominal tuberculosis	5	20.83
Others	4	16.67
Total	**24**	**100**

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

Diagnosis of extra pulmonary tuberculosis (EPTB) were based on:

A thorough history, a clinical examination, a look for extrapulmonary infection, a sputum smear or culture for Mycobacterium tuberculosis, immunological testing, a tuberculin test, radiographic results, histological findings, and additional investigations as needed are all part of the process.

Any organ system outside of the lung parenchyma, such as the pleura, lymph nodes, belly, genitourinary tract, pericardium, meninges, skin, joints, and bones, may be affected by EPTB.

Table 2 shows: Out of 24 patients, eight (33.33%) had tubercular lymphadenopathy, EPTB, seven (29.17%) had tubercular pleural effusion, five (20.83%) had abdominal tuberculosis, and four (16.67%) had other types of EPTB,

including two with tubercular meningitis, one with tubercular pericardial effusion, and one with tuberculoma.

AGE DISTRIBUTION OF STUDY POPULATION

Table 3

Age distribution	**TB Diagnosis**		**Total**	**P value**
	.00	**1.00**		
1) <=30	60(90.91%)	6(9.09%)	66(100.00%)	
2) 31-40	60(83.33%)	12(16.67%)	72(100.00%)	
3) 41-50	41(93.18%)	3(6.82%)	44(100.00%)	0.121
4) 51-60	7(70.00%)	3(30.00%)	10(100.00%)	
5) >60	8(100.00%)	0(0.00%)	8(100.00%)	
Total	**176(88.00%)**	**24(12.00%)**	**200(100.00%)**	

*** 0 – Patients without EPTB * 1 – Patients with EPTB**

Table 3 shows: Out of 200 patients, 66 patients (33%) were under the age of 30; of these, 6 patients (9.09%) had EPTB. Of the 72 patients (36%) who were between the ages of 31 and 40, 12 patients (16.67%) had EPTB; of the 44 patients

(22%) who were between the ages of 41 and 50, 3 patients (6.82%) had EPTB; and of the 10 patients (5%) who were between the ages of 51 and 60, 3 patients (30%) had EPTB.

AGE DISTRIBUTION OF EPTB PATIENTS:

Table 4

Age group (in years)	**Number of patients with EPTB**	**Percentage**
≤ 30	6	25
31-40	12	50
41-50	3	12.5
51-60	3	12.5
>60	0	0
Total	**24**	**100**

Table 4 shows: Out of 24 patients with EPTB, 6 patients (25%) were under the age of 30, 12 patients (50%) were

between the ages of 31 and 40, 3 patients (12.5%) were

between the ages of 41 and 50, and 3 patients (12.5%) were between the ages of 51 and 60, indicating that EPTB is more prevalent in those between the ages of 31 and 40, but it was statistically insignificant (p=0.2).

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

AGE DISTRIBUTION WITH TYPE OF EPTB

Table 5

Age group (in years)	TYPE OF EPTB				Total	P value
	0	1	2	3		
1) <=30	1(16.67%)	3(50.00%)	2(33.33%)	0(0.00%)	6(100.00%)	0.610
2) 31-40	3(25.00%)	4(33.33%)	2(16.67%)	3(25.00%)	12(100.00%)	
3) 41-50	2(66.67%)	0(0.00%)	0(0.00%)	1(33.33%)	3(100.00%)	
4) 51-60	1(33.33%)	1(33.33%)	1(33.33%)	0(0.00%)	3(100.00%)	
Total	**7(29.17%)**	**8(33.33%)**	**5(20.83%)**	**4(16.67%)**	**24(100.00%)**	

*** 0 - Pleural effusion * 1 – Lymphadenopathy * 2- Abdominal Tuberculosis * 3- Others**

Table 5 shows: Out of 24 EPTB patients, 6 were under the age of 30. Of them, 2 (33.33 percent) had abdominal tuberculosis, 3 (50 percent) had lymph node involvement, and 1 (16.67 percent) had pleural effusion. There were 12 individuals in the 31–40 age range, of whom 3 (or 25%) had pleural effusion and 4 (or 33.33%) had lymph node involvement. Three patients (25%) had various kinds of EPTB, such as pericardial effusion, tubercular meningitis, and tuberculoma, whereas two patients (16.67%) had abdominal tuberculosis. Three patients in the age range of 41 to 50 years developed EPTB, of whom two (66.67%) had pleural effusion and one (33.3%) had tubercular meningitis. Three people in the 51–60 age group had EPTB, with one patient (33.33%) having pleural effusion, one patient (33.33%) having lymph node involvement, and one patient (33.33%) having abdominal tuberculosis.

Out of 24 EPTB patients, 7 had tubercular pleural effusion (29.17%), 8 had tubercular lymphadenopathy (33.33%), 5 had abdominal tuberculosis (20.83%), and 4 had different forms of EPTB (16.67%), including 2 with tubercular meningitis, 1 with tubercular pericardial effusion, and 1 with tuberculoma. hence showing that pleural effusion, abdominal tuberculosis, and other kinds of EPTB are more likely in HIV patients, although that link is statistically insignificant (p=0.610).

SEX DISTRIBUTION OF STUDY POPULATION

Table 6

Sex	TB Diagnosis		Total	P value
	.00	1.00		
Males	127 (90.07%)	14 (9.93%)	141 (100.00%)	0.164
Females	49 (83.05%)	10 (16.95%)	59 (100.00%)	
Total	**176 (88.00%)**	**24(12.00%)**	**200(100.00%)**	

*** 0 – without EPTB * 1 – with EPTB**

Table 6 shows: Out of 200 patients, 141 patients (70.50%) were male and 59 patients (29.50%) were female. Of the 141 patients, 14 (9.93%) and the 59 patients, 10, respectively, hadEPTB.

SEX DISTRIBUTION OF PATIENTS WITH EPTB:

Table 7

Sex	No of EPTB patients	Percentage
Male	14	58.3

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

Female	10	41.7
Total	**24**	**100**

Table 7 shows: Out of 24 patients with EPTB, 14 (58.3%) were men and 10 (41.7%) were women, showing that men are more likely to develop the condition, however this difference is statistically insignificant (p=.164).

Discussion

One of the greatest health issues facing the whole planet is tuberculosis. HIV-positive people account for 11–13% of incident TB cases (WHO, 2011). This is due to the fact that In their investigation, Leeds IL et al. retrospectively examined 320 EPTB patients from 1995 to 2007 at a single metropolitan US public hospital. Lymphatic (28%) disseminated (23%) and CNS/meningeal (22%) illness were the most typical locations of EPTB. In a group of patients receiving treatment for tuberculosis, Namme LH et al. assessed the incidence of extra pulmonary tuberculosis (EPTB), the different organ locations affected, and their associations with HIV infection. 33.6 percent of individuals with EPTB had HIV infection. Bones and joints (29.6%), lymph nodes (17.8%), the pleura (15%), the peritoneum (14.3%), and the central nervous system and meninges (14.3%) were the disease areas most often afflicted (9 percent
). The CD4 cell count was 68 cells/mm3 on average (range: 32–165). The most typical locations of disease involvement were the pleura (36.3%), lymph nodes (28.7%), and abdomen (27.5%). In our research, out of 24 EPTB patients, 14 patients (58.33%) and 10 patients (41.66%) were male and female, respectively. In their investigation, Singh G found that most of the patients were men (84.3 percent).

Gjergji M evaluated the TB symptoms in HIV/AIDS patients. 50 percent of the individuals with EPTB in the study population were men. The average baseline CD4 count in our research was 196.12 + 123.01 cells/mm3. Of the 24 patients with EPTB, 14 (58.33%) had CD4 counts below 200, 8
(33.33%) had CD4 counts between 201 and 400, and 2
(8.33%) had CD4 counts between 401 and 600. A 190.5 cells/mm3 median CD4 count was seen. In their investigation, Gounden S discovered that the median CD4 cell count was 68 (with a range of 32–165 cells/mm3). Out of 24 patients with EPTB, 22 (91.7%) were heterosexual, and 2 (8.3%) had no knowledge of their sexual orientation. This indicates that more heterosexual individuals have EPTB, although it is not statistically significant (p.0795) 22 patients (91.6%) and 2 patients (8.3%) who had EPTB were married out of the 24 patients who had it.

HIV-associated immunological depression raises the probability of developing active TB from roughly 5% over the course of a lifetime to 10% every year (Corbett EL). The degree of immunological depression, the current socioeconomic climate, and the danger of contracting TB all play a role in this risk (Holmes CB). The mean age of EPTB patients in our research was 38.21 + 8.86 years. In individuals with HIV infection, Barthwal MC et al. investigated the clinical characteristics of extra pulmonary TB. There were 50 instances, all of them were male and had a mean age of 35. In their investigation, Gounden S found that the average patient age was 34.73 years (SD: 9.44). Out of 24 patients in our research, 29.17% had tubercular pleural effusion, 33.3% had tubercular lymphadenopathy, 20.83% had abdominal tuberculosis, and 16.67% had various forms of EPTB, including 2 cases of tubercular meningitis, 1 case of tubercular pericardial effusion, and 1 case of tuberculoma. Over the course of 13 years, Kipp AM et al. conducted a case- control study on 6,124 TB patients. A total of 1,366 (22.3%) patients with EPTB and 563 (9.2%) patients with HIV co- infection had tuberculosis overall. Pleura (25.1 percent) and cervical lymph nodes were the locations of illness that were most

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

often present (15.7 percent).

Conclusion

According to our research, 14% of HIV patients developed EPTB, with TB lymphadenopathy being the most prevalent kind, followed by TB pleural effusion and abdominal tuberculosis. According to our research, heterosexual men (14/24) between the ages of 31 and 40 with CD4 counts under
200 had a higher prevalence of EPTB, although this difference was not statistically significant (p=0.05).

Extra pulmonary tuberculosis (EPTB) was found to be prevalent in 14% of HIV positive patients, which is consistent with the majority of studies on extra pulmonary tuberculosis in HIV patients. Our study, "Prevalence of EPTB in HIV patients," was conducted on adult HIV infected patients of either sex who had extra pulmonary tuberculosis and attended ART Centers, OPD and in-patients (Department of Medicine)at Government Medical College Jam.

References

1. Sharma, S.K.; Mohan, A.; Kohli, M. Extrapulmonary tuberculosis. *Expert Rev. Respir. Med.* 2021.
2. Wilkinson, R.J.; Rohlwink, U.; Misra, U.K.; van Crevel, R.; Mai, N.T.H.; Dooley, K.E.; Caws, M.; Figaji, A.; Savic, R.; Solomons, R.; et al. Tuberculous meningitis. *Nat. Rev. Neurol.* 2017, *13*, 581–598.
3. Rock, R.B.; Olin, M.; Baker, C.A.; Molitor, T.W.; Peterson, P.K. Central nervous system tuberculosis: Pathogenesis and clinical aspects. *Clin. Microbiol. Rev.* 2008, *21*, 243–261.
4. Ekermans, P.; Duse, A.; George, J. The dubious value of cerebrospinal fluid adenosine deaminase measurement for the diagnosis of tuberculous meningitis. *BMC Infect. Dis.* 2017, *17*, 104.
5. Arora VK, Chopra KK. Extra pulmonary tuberculosis *Indian J Tuberc* 2007; 54 : 165-67.
6. Barthwal MC, Rajan KE, Deoskar RB, Sharma SK. Extrapulmonary tuberculosis in human immunodeficiency virus infection. *MJAFI* 2005; 61: 340-41.
7. Bernardo J. Clinical manifestations, diagnosis, and treatment of extrapulmonary and miliary tuberculosis. *Wolters Kluwer* 2016.
8. Caws M, Thwaites G, Dunstan S, Hawn TR, Lan NT, Thuong NT, *et al*. The influence of host and bacterial genotype on the development of disseminated disease with *Mycobacterium tuberculosis. PLoS Pathog* 2008; 4 (3): e1000034.
9. Centers for Disease Control. Revision of the CDC surveillance case definition for acquired immunodeficiency syndrome. *MMWR* 1987; 36: 1-15.
10. Centers for Diseases Control and Prevention. CDC grand rounds: the TB/HIV syndemic. *MMWR* 2012; 61 (26): 484-89.
11. Chandir S, Hussain H, Amir M, Lotia J, Khan AJ, Salahuddin N.*et al.*, Extra pulmonary tuberculosis :a retrospective review of 194 cases at a tertiary care hospital in karachi, pakistan. J Pak Med Asso. 2010;60(2):1-6
12. Cherif S, Yoganathan K, Banks T, Abdulla R. Unmasking immune reconstitution inflammatory syndrome: A report of tuberculous epididymo-orchitis mimicking a testicular tumor in a Caucasian AIDS patient. *Int J STD AIDS* 2017; 28: 100-03.
13. Chien HP, Yu MC, Wu MH. Comparison of the BACTEC MGIT 960 with Lowenstein-Jensen medium for recovery of mycobacteria from clinical specimens. *Int J Tuberculosis Lung Dis* 2000; 4: 866-70.
14. Clevenbergh P, Maitrepierre I, Simoneau G, Raskine L, Magnier JD, Sanson-Le-Pors MJ,

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

et al.Lymph node tuberculosis in patients from regions with varying burdens of tuberculosis and human immunodeficiency virus (HIV) infection. *La Presse Medicale* 2010; 39(10): e223-30.

15. Corbett EL, Watt CJ, Walker N, Maher D, Williams BG, Raviglione MC, *et al*. The growing burden of tuberculosis: Global trends and interactions with the HIV epidemic. *Arch Intern Med* 2003; 163: 1009-21.
16. Daley CL, Small PM, Schecter GF, Schoolnik GK, McAdam RA, Jacobs WR, *et al*. An outbreak of tuberculosis with accelerated progression among persons infected with the human immunodeficiency virus. An analysis using restriction-fragment-length polymorphisms. *N Engl J Med* 1992; 326 (4): 231-35.
17. Gjergji M, Bushati J, Harxhi A, Hafizi H, Pipero P. Tuberculosis in HIV/AIDS Patients. *Adv Tech Clin Microbiol* 2017; 1(3): 16.
18. Gonzalez OY, Adams G, Teeter LD, Bui TT, Musser JM, Graviss EA. Extrapulmonary manifestations in a large metropolitan area with a low incidence of tuberculosis. *Int J Tuberc Lung Dis* 2003; 7: 1178-1185.
19. Gounden S, Perumal S, Magula NP. Extrapulmonary tuberculosis in the setting of HIV hyperendemicity at a tertiary hospital in Durban, South Africa. *S Afr J Infect Dis* 2018; 33(3): 57-64.
20. Gupta KB , Kumar S, Sen R , Sen J, Verma M.role of ultrasonography and computed tomography in complicated cases of tuberculous cervical lymphadenitis. Indian J Tuberc. 2007;54:71-8.
21. Holmes CB, Wood R, Badri M, Zilber S, Wang B, Maartens G, *et al*. CD4 decline and incidence of opportunistic infections in Cape Town, South Africa: Implications for prophylaxis and treatment. *J Acquir Immune Defic Syndr* 2006; 42: 464-69.
22. ICD. International Classification of Diseases (ICD), WHO, Geneva, 2010.
23. Jamil B, Shakoor S, Hasan R. Sequelae of extrapulmonary tuberculosis after treatment: Addressing patient needs. *Int J Mycobacterial* 2016; 5(1): S149.
24. Kipp AM, Stout JE, Hamilton CD, Van Rie A. Extrapulmonary tuberculosis, human immunodeficiency virus, and foreign birth in North Carolina, 1993 – 2006. *BMC Pub Health* 2008; 8: 107.
25. Kulchavenya E, Naber K, Bjerklund Johansen TE. Influence of HIV infection on spectrum of extrapulmonary tuberculosis. *J Infect Dis Ther* 2018; 6: 5.
26. Leeds IL, Magee MJ, Kurbatova EV, del Rio C, Blumberg HM, Leonard MK, *et al.* Site of extrapulmonary tuberculosis is associated with HIV infection. *Clin Infectious Dis* 2012; 55(1): 75-81.
27. Namme LH, Marie-Solange D, Hugo Bertrand MN, Elvis T, Achu JH, Christopher K. Extrapulmonary tuberculosis and HIV coinfection in patients treated for tuberculosis at the Douala General Hospital in Cameroon. *Ann Trop Med Public Health* 2013; 6: 100-04.
28. Rieder HL, Snider DE Jr, Cauthen GM , Extra pulmonary Tuberculosis in the United States. Am Rev Respir Dis 1990;141:347-51
29. Seaton RA. Extra pulmonary tuberculosis, Crofton and Doglas's Respiratory Diseases .Fifth Edition 2000;18:535-52.
30. Shafer RW, Kim DS,Weiss J, Quale JM. Extrapulmonary tuberculosis in patients with human immunodeficiency virus infection. *Medicine (Baltimore)* 1991; 70(6): 384-97.
31. Singh G, Uyainah A, Yunihastuti E, Imran D. Clinical profile of extrapulmonary tuberculosis among TB-HIV patients in Cipto Mangunkusumo Hospital. *Ina J Chest Crit Emerg Med* 2014; 1(2): 45-50.
32. Sutariya SB, Shah HM, Patel DA, Dandge VA. Tuberculosis in patients living with HIV/AIDS: Types and its relation to CD4 count. *NJMR* 2015; 5(1): 75-78.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 08, 2023

33. Tarekegne D, Jemal M, Atanaw T, Ebabu A, Endris M, Moges F, *et al.* Prevalence of human immunodeficiency virus infection in a cohort of tuberculosis patients at Meterma Hospital, Northwest Ethiopia: A 3 years retrospective study. *BMC Res Notes* 2016; 6: 192.
34. Whalen CC, Zalwango S, Chiunda A, Malone L, Eisenach K, Joloba M, *et al*. Secondary attack rate of tuberculosis in urban households in Kampala, Uganda. *PLoS ONE* 2011; 6 (2): e16137.