ABSTRACT
Tuberculosis is the most common opportunistic infection and cause of mortality in patients with human immunodeficiency virus (HIV). The main aim of this study was to find out the relation, clinical profile, and outcome of pulmonary tuberculosis (PTB) in HIV patients. A total of 35 patients with HIV-PTB coinfection who visited the Rohilkhand Medical College and Hospital for 1 year were enrolled in this study. The pattern of PTB in HIV patients was studied by the help of history, symptoms, chest X-ray, tuberculin skin test, CD4 cell count, and the presence of other opportunistic infection.

Keywords: Chest radiology, HIV, Pulmonary tuberculosis, Sputum smear microbiology.


INTRODUCTION
The human immunodeficiency virus (HIV) pandemic presents a massive challenge to the control of tuberculosis (TB) at all levels. Among all infections, TB has been proven as one of the most common opportunistic infections in patients with HIV, and also this has led to the most leading cause of mortality in people living with HIV/AIDS. The World Health Organization (WHO) reported 8.7 million new cases of TB in 2011, of whom 13% were HIV infected. In India, there were 2.31 million people living with HIV/AIDS at the end of 2011, while the incidence of TB was approximately 1.8 million cases per year.¹

AIMS
This study aims to find the relation, clinical profile, and outcome of pulmonary tuberculosis (PTB) in HIV seropositive patients.

MATERIALS AND METHODS
All the sputum positive PTB patients who visited the pulmonary medicine department of Rohilkhand Medical College and Hospital were screened for HIV, and a total of 35 HIV-TB coinfected patients were enrolled in the study from June 2014 to May 2015. A detailed history, including their demographic characteristics, past drug history, and the presence of any risk factors, was taken. All routine blood investigations including CD4+ T-cell count and other HIV-TB coinfection-specific investigation were carried out. All chest radiographs were evaluated with findings characteristics of typical or atypical patterns in HIV-TB coinfection patients.

RESULTS
Incidence of HIV-TB coinfection was more in the 30 to 39 years (54.3%) age group followed by 20 to 29 (31.4%), 40 to 49 (11.4%), and 50 to 60 years (2.9%) age groups. Overall, the male: female ratio was 3.3:1, with a high prevalence in the 2nd and 3rd decades of life (Graph 1).

Sixty percent patients were found to have CD4+ T-cell count less than 200 and rest 40% had more than 200 (Graph 2).

Most common symptoms were weight loss (77.1%) followed by fever (74.3%), cough (62.9%), expectorant (57.1%), dyspnea (48.6%), and hemoptysis (5.7%). A total of 65.7% patients also complained of other constitutional

Graph 1: Distribution of patients as per age and sex in HIV-TB co-infected patients
symptoms like fatigue, anorexia, night sweating, etc. (Table 1).

Opportunistic infections other than PTB were candidiasis (65.7%), chronic diarrhea (45.7%), skin infections (25.7%), and herpes zoster (20%); less-opportunistic diseases were noted in 5.7% cases; and 11.4% cases had no infection (Graph 3).

Consolidation (22.9%) was more common in patients with CD4 cell count less than 200, followed by unifocal alveolar opacity (20%), multifocal alveolar opacity (14.3%), pleural effusion (14.3%), mediastinal/hilar lymphadenopathy (11.4%), miliary or cavitary shadows (5.7% each), and interstitial infiltrates (2.9%), whereas in patients with CD4 cell count more than 200, most frequent X-ray findings were cavitary lesion (50%) followed by unifocal alveolar opacity (42.9%), multifocal alveolar opacity (21.4%), and pleural effusion (14.3%). Normal chest X-ray was not seen in any of the two groups (Table 2).

In patients with CD4 count less than 200, tuberculin skin test (TST) was positive in 4 (19%) patients and negative in 6 (28.6%) patients, whereas 11 (31.4%) patients had no immune response for antigen; in patients with CD4 count more than 200, TST was positive in 6 (42.6%) patients and negative in 8 (57.1%) patients, and no individual fell in the group of anergy (Table 3).

DISCUSSION

In a survey carried out by the Revised National TB Control Program, HIV seroprevalence varied widely and ranged from 1 to 13.8% across 15 districts. An individual having HIV infection may have five to six times more risk of developing TB, as HIV breaks down the immune system and makes patients highly susceptible to TB, and once infected there is rapid progression to active TB. If a HIV patient is having symptoms like cough > 2 weeks, fever > 2 to 3 weeks, weight loss, fatigue, chest pain, unexplained dyspnea, lack of interest, or hemoptysis, he or she should be suspected for TB and investigated further.
Increase in weight loss by 10% in HIV-TB coinfection patients as compared with patients with only HIV infection in a month is the reason why this duet has gained the name “slimming disease.” Diagnosis is based on symptoms, history with proper assessment of risk factors, and investigations. Investigations generally include acid-fast bacilli, culture of sputum for mycobacterium TB, chest X-ray, TST, total lymphocyte count, CD4 cell count, and in extreme cases computed tomography (3D) scan or bronchoscopy (for lavage, biopsy, etc.). Three sputum samples should be collected for the patients suspected to have PTB, including at least one overnight collection. If sputum smear is negative in suspected patient, then chest X-ray is the alternative. Atypical X-ray findings include hilar adenopathy, diffuse pulmonary infiltrates/opacities, and absence of cavitations. It is also important to note that the chest X-ray can appear normal in 5 to 10% of individuals with HIV-TB coinfection. Other HIV-related diseases, which may be confused with PTB, are bacterial pneumonia, fungal infection, Kaposi’s sarcoma, non-TB mycobacteriosis, pneumocystis carinii pneumonia, nocardiosis, lymphoma, and cavitation. The TST in HIV positive patients of TB are found to be less positive, even on considering the duration of positivity more than 5 mm. As the HIV progresses, there is cutaneous anergy as well as impaired tissue containment of mycobacteria leading to widespread dissemination of mycobacteria. Human immunodeficiency virus is associated with decreased chemotaxis, defective granuloma formation and maintenance, impaired antigen processing and presentation, as well as generalized loss of CD+ T-cells and selective clonal depletion of mycobacterium tuberculosis-specific CD4+ T lymphocytes. Screening of all HIV-infected persons for TB and vice versa will help identify coinfected patients who require treatment for both infections.

CONCLUSION

Human immunodeficiency virus-PTB coinfection is a very lethal and progressive problem in many parts of the countries. Diagnosis of PTB in HIV individuals still relies on techniques like sputum smear microscopy, mycobacterium culture, and chest radiology. Early detection and timely management of the disease can improve the survival rate in these patients.

REFERENCES