

Radiographic Patterns in HIV Associated Pulmonary Tuberculosis

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ABSTRACT

Objective: To evaluate Radiographic patterns in HIV associated PULMONARY TUBERCULOSIS

Study Design: Observational, retrospective, descriptive study

Place and Duration of Study: This study was conducted in the Department of Infectious Diseases, Civil Hospital, Karachi between July 2008 to April 2009.

Materials and Methods: This study is conducted by reviewing the admission records of 54 HIV diagnosed patients. A total of 30 patients presented with pulmonary symptoms were evaluated by sputum smear for acid fast bacilli (AFB) and chest radiographs.

Results: Out of 30 HIV seropositive patients, 29 were male and 1 was female of mean age $\pm$ SD 33.9 $\pm$ 95 years. Sputum staining for acid-fast bacilli was positive in 10 patients (33.3 %). Frequent radiographic patterns were 12 (40%) normal, 5 (16.6%) apical infiltrate, cavitary lesion was observed in 1 patient. Dominant symptoms were weight loss 29(93.3%), fever 24 (80%).

Conclusion: Majority of HIV seropositive patients with pulmonary tuberculosis were male, common radiographic patterns were normal radiograph, apical infiltrates atypical radiographic presentation is particularly related in advance stages of immunosuppression. Cavitary lesions and pleural effusion were rare findings

Key Words: HIV, Pulmonary, Tuberculosis

INTRODUCTION

Human Immunodeficiency virus infection was first recognized in 1981 in homosexual men in New York City, who presented with evidence of acquired Immunodeficiency syndrome¹. Currently more than 40 million people are infected with HIV/AIDS and more than 3.1million related deaths occurred worldwide each year². HIV infection has now spread to every country in the world. A very large number of population including adults and children (22.5 million) are residing in sub-Saharan Africa, and 4.0 million in south and south East Asia³.

The epidemic of HIV/AIDS is also rapidly progressing in Pakistan⁴. The first case of HIV/AIDS infection reported in 1987 in the city of Lahore⁵. Pakistan presently has an HIV/AIDS prevalence of 0.1 % in adults aged 15-49 years^{6, 7}. According to UN and Government estimates, about 80,000 cases exist in the Country. Moderately high drug use and lack of evidence, non marital sex, is common in the society, which allowed the AIDS epidemics to take hold in Pakistan, mainly among injection drug user, some male sex workers and expatriated migrants workers^{6, 7}. HIV is potent risk factor for Tuberculosis, both through an increase in reactivation of latent Mycobacterium Tuberculosis infection and through an accelerated progression from infection to active diseases⁸. It has estimated, a third of the world is infected with

Mycobacterium Tuberculosis, and 9% of these cases are associated with Human Immunodeficiency Virus infection. The proportion of this association appears to be greater in Africa, but some developed countries like USA, also present high numbers^{9, 10}. In developing Countries, Tuberculosis is the leading cause of preventable death such that it is responsible for approximately 11% of deaths in adults.

The clinical and Radiological manifestations of tuberculosis in HIV infected patients may vary according to degree of immunosuppression. Atypical radiological presentation of pulmonary tuberculosis associated HIV infection has reported by other workers on this topic^{10, 11, 12} similarly; we have noted a pattern, which is different from other.

MATERIALS AND METHODS

It was an Observational, Retrospective and Descriptive study, conducted in the Department of Infectious Diseases Civil Hospital Karachi and Dow University of Health Sciences. The study conducted between July 2008 to April 2009, by reviewing the record of 54 HIV diagnosed patients admitted with, their symptoms, signs, investigations and radiographs. Data entered in a prescribed Proforma and then evaluated. Out of 54 patients we selected, 30 patients have correlation between their symptoms, signs, blood CP, ESR, CD4 count, Sputum acid fast bacilli staining for mycobacterium tuberculosis and pulmonary

Radiographic pattern . Though the Culture and Sensitivity for blood, sputum, urine and stool were done but the Culture and sensitivity of Mycobacterium Tuberculosis was not done, due to lack of funds. All of them were on antituberculous therapy and they responded to treatment. Two consultants analyzed the radiographic patterns (table 1) and symptoms and signs were assessed (table 2)

RESULTS

Out of 30 HIV seropositive patients, all of them were male except one female; of mean age $\pm$ SD of patients was 33.9 ± 9.5 years .Sputum staining for Acid fast Bacilli was positive in 10 (33.3%) patients. Dominant atypical Radiographic patterns was observed in 12 (40%) normal; 5 (16.6%), atypical infiltrate; 3 (10%), consolidation; 3 (10%), reticulonodular shadows; 3(10%) [Table. 1] with dominant symptoms of weight loss; 28(93.3%), fever; 24 (80%), chronic cough; 21 (73.3%) [Table. 2]

Table No.1: Pulmonary Radiological Patterns in HIV positive patients

Sr. No.	Radiographic patterns	Number of patients	%age
1	Normal	12	40%
2	Apical infiltrate	5	16.6%
3	Consolidation	3	10%
4	Reticulonodular shadows	3	10%
5	Pleural effusion	2	6.6%
6	Cavitatory lesions	1	3.3%
7	Collapse	1	3.3%
8	Military shadows	1	3.3%
9	Lymphadenopathy	1	3.3%
10	Pulmonary nodules	1	3.3%

Table No.2: Clinical features of admitted patients infected with HIV

Sr.No.	Clinical features	Number of patients	%age
1	Weight loss	28	93.3%
2	Fever	24	80%
3	Chronic Cough	21	73.3%
4	Anorexia	17	56.6%
5	Chest pain	4	13.3%
6	Haemoptysis	1	3.3%
7	Night sweets	1	3.3%
8	Diarrhea	16	43.3%

DISCUSSION

Since the start of AIDS epidemics in 1981, respiratory diseases have an important cause of morbidity and mortality. Worldwide approximately 19 to 43% of population is infected with tuberculosis although most are asymptomatic, the likelihood of reactivation is increasing because of HIV infection alone, half of the

patients co-infected with HIV and tuberculosis eventually have a reactivation of the diseases.¹⁰

Despite the recent encouraging advances in the management of AIDS patients, pulmonary tuberculosis by mycobacterium is commonest infection in the Department of infectious diseases Civil Hospital Karachi that is a tertiary care hospital.

We have conducted a retrospective observational study in HIV diagnosed patients presented to our department with the commonest symptoms of weight loss, fever, and chronic cough. Most of them were male except one female; between ages of 25-50 year, many of them were I/V drug abuser, with history of foreign travel and promiscuity.

We have study the radiological pattern of pulmonary tuberculosis in relation to history, sign and symptoms, sputum for AFB positive as well as negative finding. Our study results were amazing and different from usual typical finding from other workers on this topic. Cavitatory lesion, lymphadenopathy, miliary shadows, pleural effusion was the common findings in African and South Eastern Nigerian patient^{11,14,17,18}. Common Radiological Patterns, which we observed, were normal 40%; infiltrations 16.6%; consolidation10%; and reticulonodular shadows10%.

Greenburg SD, Frager D, Suster B etal highlighted 14% normal radiographic appearances with pulmonary tuberculosis and HIV infection^{14, 15}. Similarly Aderaye G. Bruchfeld I, Assefa G etal showed 9.2%normal radiographic appearances¹⁰; as well as other researchers supports our finding of normal radiographs with sputum AFB positive as well negative findings^{16, 19, 20, 21}.

CONCLUSION

Therefore, in conclusion while dealing with an HIV patient, very high level of suspicion is required by clinician even with normal radiograph and AFB negative smear, as it is common with low level of immune-suppressant (low CD4) in HIV patients.

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