

To Study the Radiological Features of Pulmonary Manifestations in HIV Infected Patient

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Conflict of interest: Nil

Abstract:

Background & Method: The aim of the study is to study the radiological features of pulmonary manifestations in HIV infected patient.

Result: In our study chest X Ray findings of patients who have HIV with Tuberculosis showed a mix pattern that is different to Tuberculosis cases who do not have HIV (TB cases without HIV) as we know the commonest findings of TB cases without HIV are cavietry lesions and upper zone pathological findings while in our study we found that a few cases have cavitary lesions and upper zone findings also not common. 5 cases have lower zone findings, 5 cases have upper zone findings, 1 case has middle zone findings, 2 cases have upper middle zone findings, 7 cases have findings in middle and lower zone while 9 patients of HIV with TB have normal chest X-ray. Radiological findings of our study showed that 15 cases out of 49 have pleural effusion i.e. 30.6% of total cases.

Conclusion: In our study most common findings are diffuse lesions either unilateral or bilateral 20 cases out of 49 cases of TB with HIV showed diffuse features (11 b/l and 9u/l) and this is 40% of all cases. In our study total 15 cases out of 49 have pleural effusion (30.6% of total cases) and there is not any significant correlation between pleural effusion and CD4 counts. At the CD4 count <200 the chest radiographic pictures showed media sternal lymphadenopathy (61.4%), mid and lower zone involvement 86.7%, B/L lung involvement (50%), miliary and disseminated pattern (49.9%). The patients who had CD4 count >200 showed cavitary and upper zone lesions in their chest radiographs.

Keywords: radiological, pulmonary, manifestations & HIV.

Study Designed: Observational Study

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Introduction

The human immunodeficiency virus (HIV) is a retrovirus that infects cells of the immune system, destroying or impairing their function. As the infection progresses, the immune system becomes weaker, and the person becomes more susceptible to infections. The most advanced stage of HIV infection is acquired immunodeficiency syndrome (AIDS). It can take 10-15 years for an HIV-infected person to develop AIDS; antiretroviral drugs can slow down the process even further [1].

HIV is transmitted through unprotected sexual intercourse (anal or vaginal), transfusion of contaminated blood, sharing of contaminated needles, and between a mother and her infant during pregnancy, childbirth and breastfeeding [2].

HIV epidemic has posed major challenges to TB control efforts globally. HIV weakens the immune

system. Someone who is HIV-positive and infected with TB is 5-7 times more likely to develop active TB than someone infected with TB but not infected with HIV. TB is a leading cause of death among people who are HIV-positive accounting for about 11% of AIDS deaths worldwide [3].

Tuberculosis is the most common opportunistic disease in Asia among people living with HIV/AIDS. While the double stigma of HIV and TB leads to delays in TB diagnosis and treatment, mortality in HIV+ TB patients is also higher due to a worse prognosis or other opportunistic infections occurring. With scaling-up antiretroviral therapy in South-East Asia, management of TB/HIV will need special attention in both programmes [4].

Acquired immune deficiency syndrome or acquired immunodeficiency syndrome (AIDS) is a disease of the human immune system caused by the human

immunodeficiency virus (HIV) [5]. This condition progressively reduces the effectiveness of the immune system and leaves individuals susceptible to opportunistic infections and tumors. HIV is transmitted through direct contact of a mucous membrane or the bloodstream with a bodily fluid containing HIV, such as blood, semen, vaginal fluid, pre-seminal, and breast milk. This transmission can involve anal, vaginal or oral sex, blood transfusion, contaminated hypodermic needles, exchange between mother and baby during pregnancy,

childbirth, breastfeeding or other exposure to one of the above bodily fluids [6].

Material & Method

All HIV-positive patients attending OPD/IPD for follow-up/treatment of HIV. All newly detected HIV Positive cases

Inclusion criteria:

- All HIV-positive cases attending OPD/IPD.

Results

Table No. 1: Showing distribution of cases according to age group

S. No.	Age group (in yrs)	Male		Female		Total
		No.	%	No.	%	
1.	14-20	06	11.11	01	3.84	07
2.	21-30	11	20.37	10	38.46	21
3.	31-40	26	48.14	11	42.30	37
4.	41-50	10	18.5	03	11.53	13
5.	> 50	01	1.85	01	3.84	02
	Total	54	100%	26	100%	80

In our study cases taken between the age of 14 years to 62 years (minimum age 14 yr. and maximum age 62 yr.) The mean age of cases of our study is 33.33 yr. Maximum cases are in the age group of 31-40 yr. (This is for both sexes either male or female). Minimum number of cases are in the age group of >50 yr. (This is also for both sexes).

Table No. 2: Showing distribution of cases according to HIV route of transmission

S. No.	Route of transmission	Number of cases			
		Male		Female	
		No.	%	No.	%
1.	Sexual	39	72.22%	19	73%
2.	Blood transfer	09	16.66%	07	27%
3.	IVD	06	11.11%	00	00%
	Total	54	100%	26	100%

The most common route of HIV transmission in our region is sexual 58 cases out of 80 (72.5%) have infection via this route. Total 9 patients out of 80 got infection via blood/blood product and this is 11.25% of total. 6 patients out of 80 got infection are IV drug abuser and this is 7.5% of total.

Table No. 3: Showing symptomatology

Symptoms	Without P.T.B.	With P.T.B.	Total	%
Fever	11	44	55	68.75%
Cough	13	49	62	77.5%
Urinary symptoms	05	22	27	33.75%
Diarrhoea	22	23	45	56.25%
Weight loss	24	47	71	88.75%
Dyspnoea	00	30	30	37.5%
Oral ulcers	07	14	21	26.25%

In our study the most common symptoms found is weight loss total 71 patients out of 80 have weight loss and this is 88.75% of total.

The second most common symptom is cough total 62 patients out of 80 have cough and this is 77.5% of total.

In patients who were HIV positive but do not have TB the second most common symptom is diarrhoea after weight loss. 22 patients out of 31 (HIV positive without PTB) have diarrhoea and this is 70.96% of total.

Table No. 4: Showing distribution of cases HIV with pulmonary T.B.

S. No.		Number of cases		Percentage
		Male	Female	
1.	Without Pulmonary T.B.	18	13	38.75%
2.	With Pulmonary T.B.	36	13	61.25%
	Total	54	26	100%

Table No. 5: Showing distribution of cases according to pulmonary tuberculosis and CD4

S. No.	CD4 count	No. of cases without Pulmonary TB		No. of cases with Pulmonary TB		Total	%
		Male	Female	Male	Female		
1.	< 200	11	09	25	7	52	65
2.	201-350	02	02	11	05	20	25
3.	> 350-500	02	02	0	01	05	6.25
4.	> 500	03	0	0	00	03	3.75
	Total	18	13	36	13	80	100

In our study mean CD4 count. Total cases have CD4 count <200 are 52 (36 males and 16 females) and this is 65% of total. Cases who have CD4 count between 201-350 are 20 (13 males and 7 females) and this is 25% of total. Cases who have CD4 count 350-500 are 5 (2 males and 3 females) and this is 6.25% of total. Cases who have CD4 count >500 are 3 (3 males and 00 female) and 3.75% of total.

Discussion

In our study we have taken total 80 cases, 49 of them are male and 31 are female. The maximum number of cases in both sexes are in the age group of between 30-39 yrs. The mean age in our study is 33.33 and the sex ratio is 2:1.

Muneer Hussain Siddiqui and others (in Pakistan, Jan. 2008 to Mar. 2009) studied 52 cases of HIV and the mean age in their study were 33.9 i.e. near about our study. Although the sex ratio was different (25:1) from our study (2:1).

In our study 71 cases out of 80 have weight loss and this is 88.75% of total cases it means the commonest symptoms in HIV positive cases present in our study is weight loss. This is similar to study of Lissane Seifu et al. In their study 693 cases out of 925 had weight loss it means 77% of total cases had weight loss and this was the commonest symptoms found in HIV cases in their study. So it is similar to our study [10].

In the study Munner Hussain Siddiqui and others the most common symptom found in HIV positive was weight loss i.e. similar to our study. In our study 71 cases out of 80 have weight loss and this is 88.75% of total cases [7].

In our study the most common sign present in HIV positive cases is pallor. 52 cases out of 80 have pallor and this is 65% of total cases. This is similar to study conducted by Munner Hussain Siddiqui and others. In their study they also found most common symptom pallor in HIV positive cases [8]. There

were 33 cases out of 52 cases had pallor that was 63.5% of total cases.

In our study chest X-Ray findings of patients who have HIV with Tuererculosis showed a mix pattern that is different to Tuererculosis cases who do not have HIV (TB cases without HIV) as we know the commonest findings of TB cases without HIV are cavietry lesions and upper zone pathological findings while in our study we found that a few cases have cavietry lesions and upper zone findings also not common.

In our study most common findings are diffuse lesions either unilateral or bilateral 20 cases out of 49 cases of TB with HIV showed diffuse features (11 b/l and 9u/l) and this is 40% of all cases. 5 cases have lower zone findings, 5 cases have upper zone findings, 1 case has middle zone findings, 2 cases have upper middle zone findings, 7 cases have findings in middle and lower zone while 9 patients of HIV with TB have normal chest Xray [9].

Radiological findings of our study showed that 15 cases out of 49 have pleural effusion i.e. 30.6% of total cases. While study of Peter E.J., Eissen D.E., Immana. Nagha K.K. showed that 39 cases out of 124 had pleural effusion in their radiological findings. That mean 32% of all cases had pleural effusion and this is near about similar to our study.

In our study 26 cases out of 49 have sputum smear positive for AFB it means 53% cases of HIV with tuberculosis have positive sputum smear for AFB this is more than study of Peter E.J., Eissen D.E., Immana Nagha K.K. In their study they found 50 cases out of 124 had sputum smear positive for FAB and this is 40% of total cases

In our study most common radiological findings seen in chest x-ray are consolidation and pleural effusion. And this is also similar to study of Peter E.J., Eissen D.E., Immana Nagha K.K.

One another study conducted by Desalu, Olufemi O. Danfulani, Mohammed; Gambo, Z and others this

study showed effect of immunosuppression on the chest radiographic features offers patients of HIV with TB.

According to this study TB can produce typical and atypical patterns on radiological features of the patients of HIV with TB. The pattern depend on the degree of immunosuppression they studied 127 cases of HIV with TB (74 female, 53 males) the mean age of their study was 35 years and CD4 count was 166.

40% cases were smear positive (50 patients out of 127) and 73% have CD4 count <200 (93 out of total 127 cases) while 34 cases out of 127 (26.8%) were sputum smear negative.

At the CD4 count <200 the chest radiographic pictures showed media sternal lymphadenopathy (61.4%), mid and lower zone involvement 86.7%, B/L lung involvement (50%), miliary and disseminated pattern (49.9%).

The patients who had CD4 count >200 showed cavitary and upper zone lesions in their chest radiographs.

In our study the patients of HIV with TB showed a mixed pattern of findings the CD4 count of patients of HIV with TB is 172 in our study. In our study the most common chest x-ray findings are pleural effusion and consolidation.

In our study lung involvement according to zonal region diffuse lung involvement either unilateral or bilateral is most common, 11 cases out of 49 have bilateral diffuse lung findings while 9 cases out of 49 have unilateral diffuse radiological findings[10]. So, total 20 cases out of 49 have diffuse pattern of lung involvement. 6 patients out of these 20 patients have CD4 count >200 while 14 cases have CD4 count <200.

5 patients out of 49 showed upper zone involvement (either unilateral or bilateral) in their chest x-ray features. 3 patients out of these 5 patients have unilateral involvement while 2 have bilateral involvement. 3 patients out of these 5 have CD4 count >200 while 2 have CD4 count <200.

2 patients out of 49 showed upper and middle zone involvement in their radiological features. 1 out of these 2 has CD4 <200 while 1 has CD4 >200.

3 patients out of 49 have middle zone involvement (2 bilateral and 1 unilateral) out of these 3, 2 patients have CD4 count <200 while 1 patient has CD4 count >200.

7 patients out of 49 have middle lower zone involvement (2 bilateral and 5 unilateral) middle and lower zone involvement is more common in patients who have CD4 count <200.

4 patients out of 49 have lower zone involvement (1 bilateral and 3 unilateral) 2 patients out of these 4 have CD4 count <200 while 2 have CD4 count >200.

In the study conducted by Desalu, Olufemi O. Danfulani, Mohammed; Gambo, Z and others showed pleural effusion was significantly more closely associated with CD4 count >200 then CD4 count <200. In our study total 15 cases out of 49 have pleural effusion (30.6% of total cases) and there is not any significant correlation between pleural effusion and immunosuppression (CD4 count). Though in other studies pleural effusion occur most commonly in patients who have CD4 count >200 because in HIV positive patients pleural effusion is due to hypersensitive reaction in the pleura and this was responsible for most patients with T-lymphocyte count of >200 presenting with pleural effusion but in our study patients showed no correlation between CD4 count and pleural effusion. This may be because of IRIS the further study is needed for confirmation.

Conclusion

In our study most common findings are diffuse lesions either unilateral or bilateral 20 cases out of 49 cases of TB with HIV showed diffuse features (11 b/l and 9u/l) and this is 40% of all cases. In our study total 15 cases out of 49 have pleural effusion (30.6% of total cases) and there is not any significant correlation between pleural effusion and CD4 counts. At the CD4 count <200 the chest radiographic pictures showed media sternal lymphadenopathy (61.4%), mid and lower zone involvement 86.7%, B/L lung involvement (50%), miliary and disseminated pattern (49.9%). The patients who had CD4 count >200 showed cavitary and upper zone lesions in their chest radiographs.

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