RADIOGRAPHIC APPEARANCE OF THE INTRATHORACIC TUBERCULOSIS IN 20 HIV-POSITIVE PATIENTS

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ABSTRACT

Retrospective analysis of the roentgen findings in intrathoracic tuberculosis of 20 HIV positive patients were performed. Prominent features were mediastinal and hilar lymphadenopathy. Pulmonary infiltration had more or less interstitial component. Cavitation was rare. Pleural effusion was quite common. The pulmonary infiltration involved both upper and lower lung zones, diffuse and perihilar distribution; however, the upper lung zones still predominated.

The pandemic of AIDS has had a major impact on the worldwide tuberculosis problem. Tuberculosis usually occurs early in the course of AIDS and may even be the sentinel infection. The diagnosis is difficult because the characteristic pulmonary symptoms, signs, and radiographic appearance are often absent (1). Disease tends to be extrapulmonary, disseminated and lymphatic. Pulmonary lesions, when present, often are noncavitary and nonapical.

The studies of intrathoracic tuberculosis in AIDS patients had been reported by several Thai authors (2,3,4). We conducted the study to compare the results with other reports from Thailand and from other countries.

MATERIAL AND METHODS

The chest radiographs and medical records of 20 patients who visited the infectious clinic of Ramathibodi Hospital between January 1991 to February 1994 were reviewed. All patients were seropositive to HIV infection and sputum was positive for tuberculosis. The routine PA chest film was obtained on the day of 1st visit and follow up film chest was done after treatment. In all cases, the abnormal x-ray findings were analyzed by the radiologist, documenting the presence or absence of the following findings; 1) the pattern of parenchymal infiltration and its location 2) cavitation 3) adenopathy (hilar and mediastinum) and 4) pleural effusion.

RESULTS

The patient consisted of 17 males and 3 females, age group ranged from 19 to 65 years old, as shown in table 1. The radiographic findings showed high percentage of hilar and mediastinal lymphadenopathy. Most of the cases had pulmonary infiltration of interstitial type or mixed interstitial and alveolar types. Associated cavities were rare. There was only one case of miliary tuberculosis. Pleural effusion was not uncommon, occurring alone in 3 cases. Upper zone infiltration occurred slightly more than the lower zone infiltration. The detailed information of the roentgen abnormality and the comparison with findings reported by other authors was presented in the table 2. The radiographs of the parenchymal infiltration, adenopathy and pleural effusion were illustrated in figure 1,2,3 and 4.

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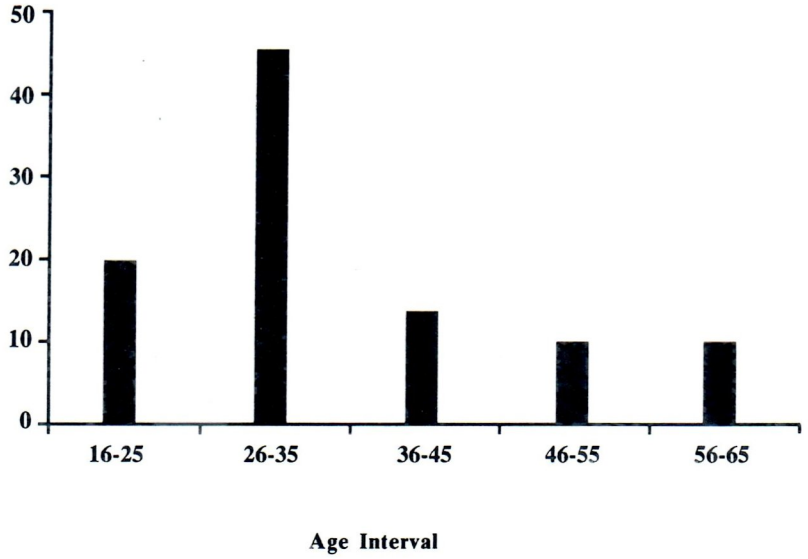


Table 1. Frequency of the patient's age group.

Table 2. Detail information of the roentgen findings in 20 AIDS- patients with intrathoracic tuberculosis

Case No.	Adenopathy	Infiltration & Location	Miliary	Effusion
1	M	RU,LL (I)	–	–
2	M	–	–	LT
3	–	LU, LL (I)	–	RT
4	–	–	–	RT
5	–	–	P	–
6	H	–	–	Bilateral
7	–	–	–	LT
8	M & H	Perihilar (I)	–	–
9	M & H	RL (A)	–	–
10	M & H	LU (I)	–	–
11	–	RU, RL (I & A)	–	–
12	M	RU (I & A)	–	–
13	–	RU (C) (I)	–	–
14	M & H	Diffuse (I)	–	–
15	–	LU, LL (I)	–	–
16	–	RL (C) (I & A)	–	–
17	–	Perihilar (I & A)	–	–
18	M	RU, RL (A)	–	–
19	–	–	–	RT
20	M & H	Diffuse (I)	–	–

M = Mediastinal
H = Hilar
I = Interstitial
A = Alveolar
C = Cavity
P = Presence

RU = right upper lung zone
RL = right lower lung zone
LU = left upper lung zone
LL = left lower lung zone

Table 3. Percentage of abnormalities, compared with other authors

Roentgen Abn	USA	Can	SPA	AFI	THA	RAMA
Normal chest	12	13	6	–	–	–
Adenopathy	59	39	32	50	–	50*
Pulmonary infilt.	47	74	38	11	90	75**
Cavitation	0	44	10	38	60	10
Miliary	18	–	12	8	10	10
Pleural effusion	12	–	10	38	–	30
Total cases	23	57	49	61	40	20

USA = United States of America, 1985 Pitchenik & Rubinson (5)
CAN = Canada, 1991 Long & Maycher (6)
SPA = Spain, 1991 Gutierrez & Miralles (7)
AFI = South Africa, 1992 Saks & Posner (8)
THA = Thailand, 1992 Punnotok & Subhannachart (4)

* Mediastinal nodes alone 40%, Hilar nodes alone 10%, Mediastinal and hilar nodes 50%
** Interstitial infiltration 53%, interstitial & Alveolar 26%, alveolar 14%
** Infiltration of upper zone & lower zone 36%, upper zone 22%, lower zone 14%, perihilar 14% and diffuse 14%

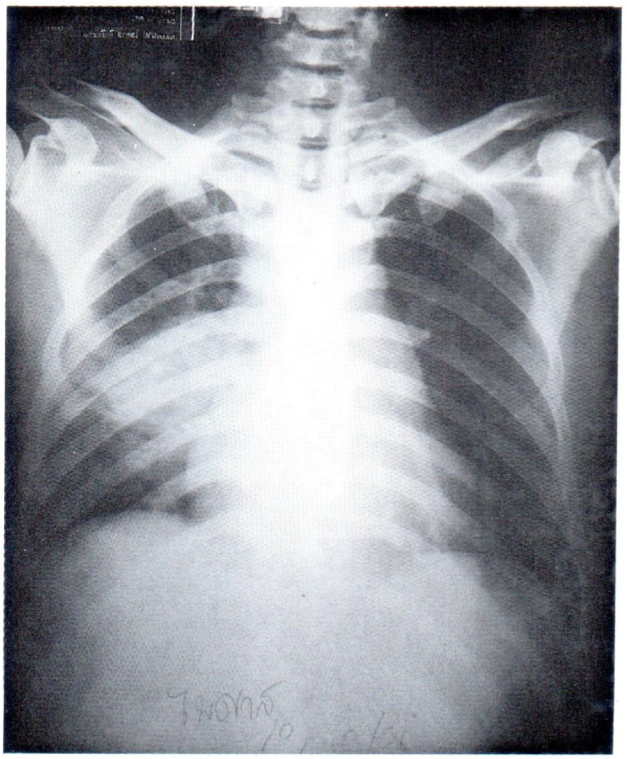


Fig.1A. PA chest film of the patient No.9

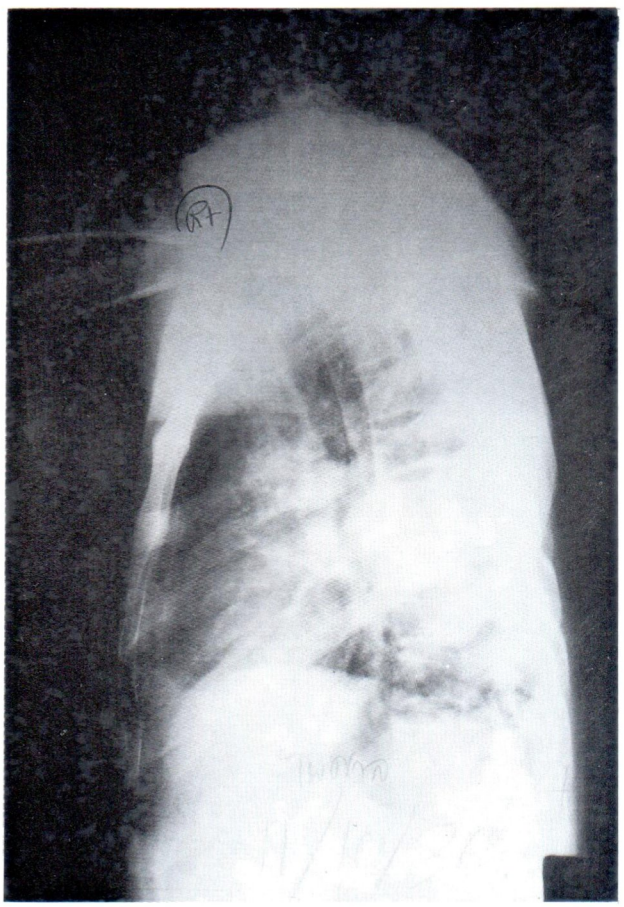
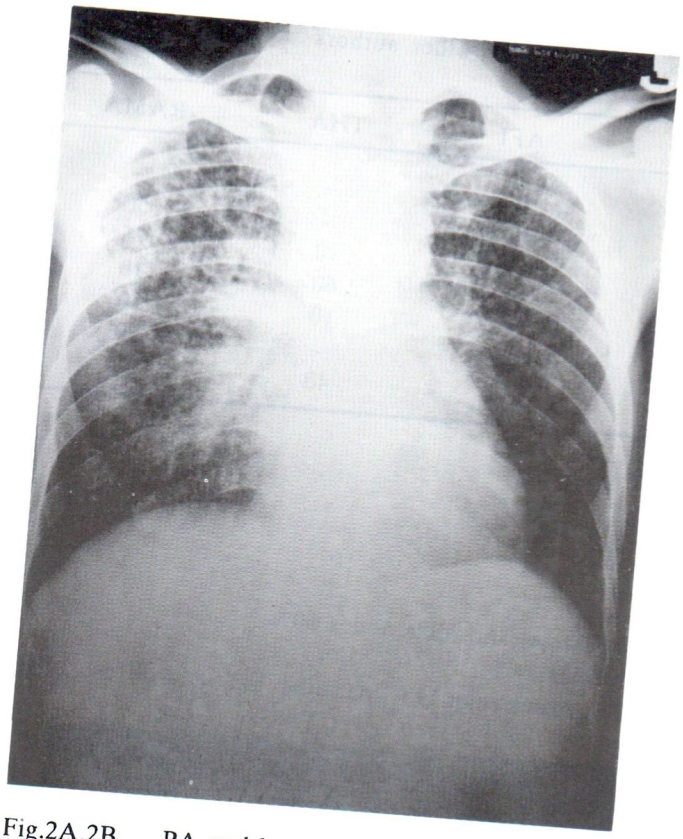


Fig.1B. Lateral chest film of the patient No.9

Fig.1A,1B. PA and lateral chest film showed consolidation of superior segment of right lower lobe with mediastinal and hilar adenopathy.



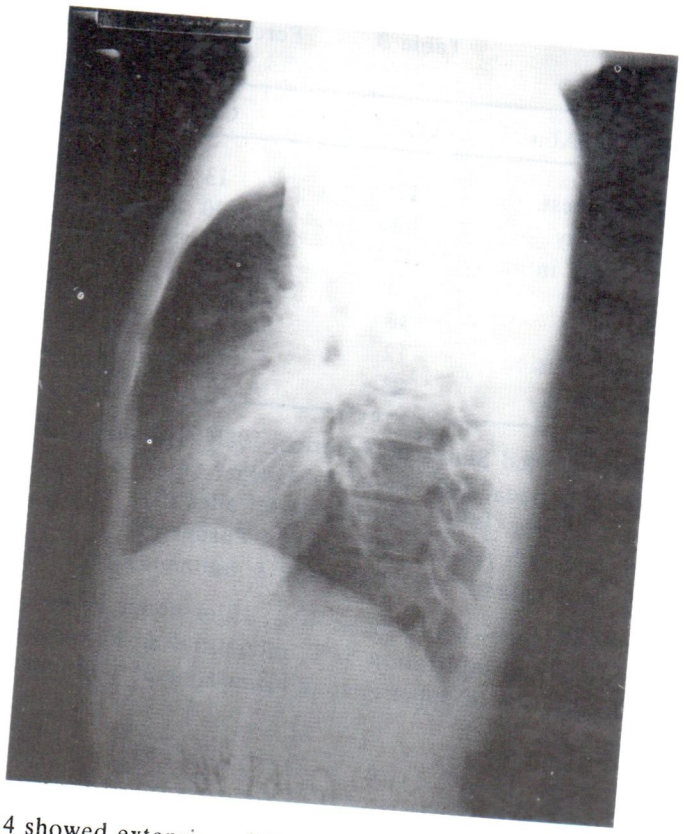


Fig.2A,2B. PA and lateral chest films of the patient No.14 showed extensive diffuse reticulonodular lesion in both lungs, most intensely present at perihilar area. Mediastinal and hilar nodes were shown.

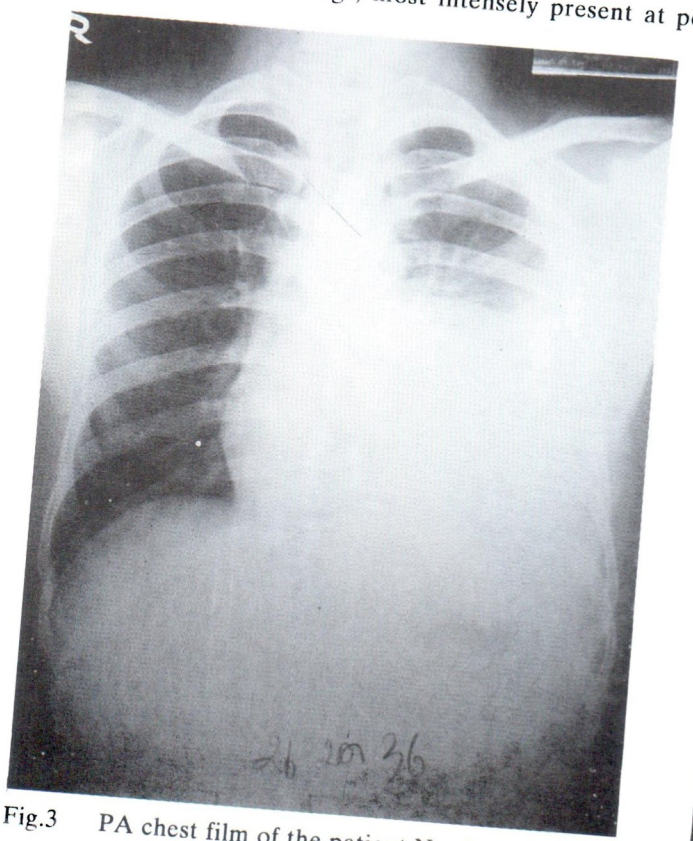


Fig.3 PA chest film of the patient No. 7 showed isolated massive pleural effusion, left side.

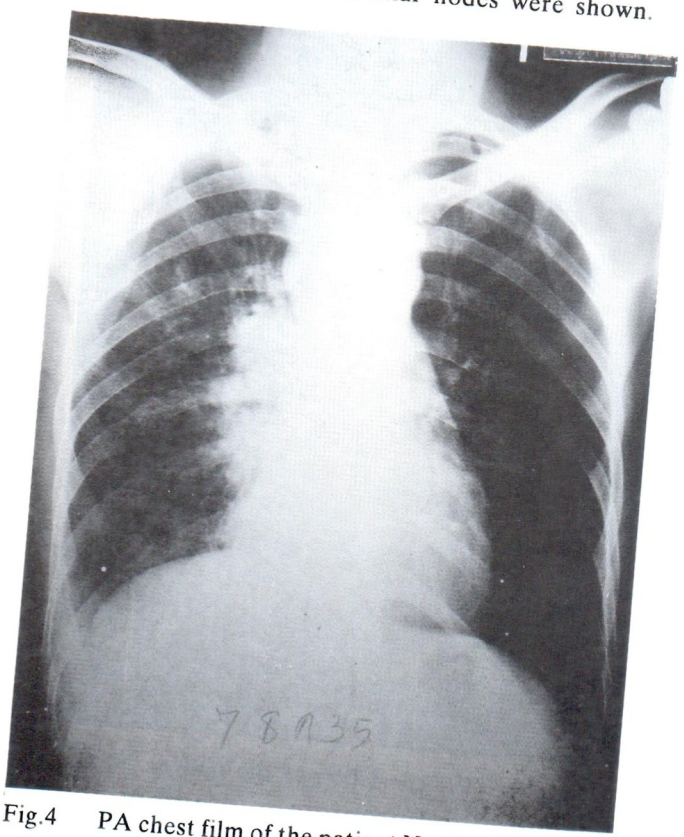


Fig.4 PA chest film of the patient No. 8 showed right perihila interstitial process with right hilar and mediastinal adenopathy.

DISCUSSION

Pulmonary tuberculosis had been divided into primary tuberculosis, postprimary tuberculosis or reactivated pulmonary tuberculosis and miliary tuberculosis(8). Primary tuberculosis develops via inhalation of infected airborne droplets. It occurs in childhood and becomes commoner in adults. It is characterized by consolidation in any areas of the lungs, however favoring lower lung fields. Hilar and mediastinal lymphadenopathy and plerual effusion is common. The reactivation tuberculosis is due to reactivation of focus acquired in childhood or initial infection in individual vaccinated with BCG or continuation of initial infection. It occurs predominantly in adulthood. The infiltration is in apical plus posterior segments of upper lobes and the rest is in the superior segment of lower lobe and in mixed location. The infiltration is divided into local exudative tuberculosis and local fibroproductive tuberculosis. Cavitation is common in extensive disease. The miliary pulmonary tubeculosis is the massive hematogenous dissemination of organsisms anytime after primary infection. The causes are severe immuno-depression during postprimary state of infection or impaired defenses during primary infection.

Presence of adenopathy and multiple areas of involvement in the lungs is similar to the primary tuberculosis. Predominated interstitial process is similar to the fibroproductive tuberculosis of reactivated type. If we compared intrathoracic tubercosis in HIV-negative patients, studied by Long (6), we can see that in our HIV-positive patients, there are more incidence of lymphadenopathy and pleural effusion and there are less incidence of parenchymal infiltration and cavitation.

REFERENCE

1. Wolinsky E. Tuberculosis, Diseases due to mycobacteria; pp 1741-1742 in Cecil Textbook of Medicine. Wyngaarden, Smith and Bennett; editors 19th ed. Philadelphia, W.B. Saunders Company.
2. Chuchotetavorn J, Buranajaru B, Stanondsakul S, Panyatangskul P. Incidence of HIV infection in adult Thai patients with tuberculosis. Thai J Tuberc Chest Dis 3:149-156,1989.
3. Pratyanond B, Nujprayoon C. AIDS and Tuberculosis. Thai J Tuberc Chest Dis 9:85-88,1988.
4. Punnotok J, Subhannacheart P, Chaisuksuwan R. Pulmonary tuberculosis among intravenous drug users with human immunodeficiency virus infection. Thai J Tuberc Chest Dis 1991;12: 15-24.
5. Pitchenik AE, Rubinson HA. The radiographic appearance of tuberculosis with acquired immune deficiency syndrome (AIDS) and pre-AIDS. Am Rev Respir Dis 1985:131;393-396.
6. Long R, Maycher B, Scalcini M, Manfreda J. The chest roentgenogram in pulmonary tuberculosis. Chest 1991;99: 123-127.
7. Gutierrez R, Miralles JC et al. Radiographic findings in pulmonary tuberculosis; the influence of human immunodeficiency virus infection. European Journal of Radiology 1991;12:234-237.
8. Saks AM, Posner R. Tuberculosis in HIV positive patients in South Africa: A compariative radiological study with HIV negative patients. Clinical Radiology 1992;46: 386-390.
9. Daehanert W.Radiology review Manual, 2nd ed.pp 332-333 Baltimore, Williams & Wilkins.