ORIGINAL ARTICLE

Radiological and Pathological Co-Relation between Category 1 & 2 of Pulmonary Tuberculosis

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ABSTRACT

Objective: Pulmonary TB is a worldwide infection and medical, social problem causing increase mortality and morbidity especially in our country. The aim of study was to explore the relation b/w degree of smear +ive with radiological extent of lesions on x-ray and HRCT.
Material and Methods: Chest radiographs of 2500 patients were received, with sputum +ve .Post t/m residual changes were classified according to the severity of these changes. Data analysis was done by tabulating these categories with pulmonary and extrapulmonary lesions.
Results: Clearance of chest radiograph was seen in 40% cases and persistent cavitations was seen in 30% cases with past h/o TB, with only 12% no such history. Age prevalence between males and females noted.
Conclusion: Radiology provides essential information for the management and follow up of the patients and is extremely valuable for monitoring complications.
Keyword: Lung CT, Lung infection, Pulmonary, Tuberculosis

INTRODUCTION

Category 1 pulmonary TB (smear positive or negative) either with no history of prior Anti TB drugs or if drugs taken, duration is less than 30 days Category 2 Smear positive pulmonary TB patients, who has taken anti- TB treatment is more than one month. The traditional imaging concept of primary and reactivation TB has been challenged and radiological features depend upon the level of host immunity rather than the elapsed time after the infection .

MATERIAL AND METHODS

The study was conducted in Ghulab Devi Chest Hospital, Lahore on 2500 patients. Both male and female patients included with age ranges between 1 year to 65 years. Patients screened with sputum +ive and chest radiographs showing either paratracheal or mediastinal lymphadenopathy, consolidation and pleural effusion. Follow up showed 1800 patients in category 1 pulmonary TB and 700 patients in category 2 i.e., sputum still +ive and radiologically size of the lesion increased and sequelae of pulmonary TB seen. Data collection was done within 6 months duration i.e July to Dec 2008.

RESULT

Chest Radiographs of 2500 patients seen in 6 months duration. Study was conducted during period July-2008 to December-2008.

Male patients: 1600
Female patients: 900
Total: 2500
Category I: 1800
Category II: 700

Category I

0-01-years	10-24 years	25-35 years	35-40-years	40-45 years	55-64 years	65 years							
M	F	M	F	M	F	M	F	M	F	M	F	M	F
10	25	60	70	170	240	275	110	204	157	201	100	175	80

Category II

15-30-years		30-60 years		60 + years			
M		F		M	F	M	F
45		85		210	100	180	80

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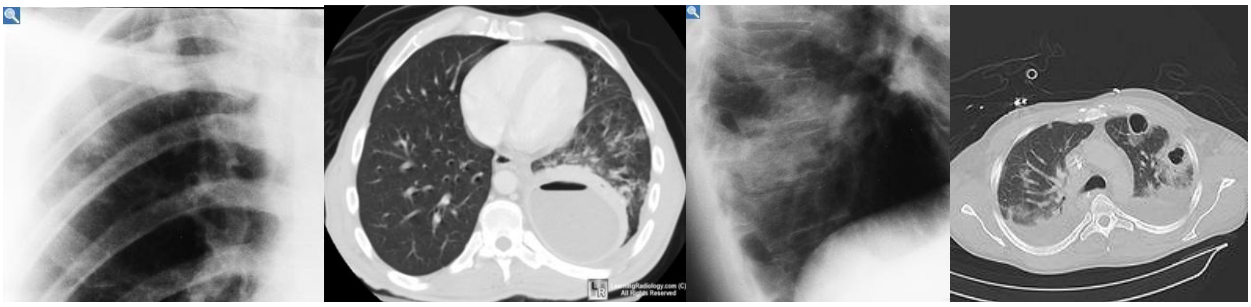
Total Pts	2500	**Category I**	1800	**Negative**	800	**New**	1800
Female	900	**Category II**	700		200	**Other**	700
Male	1600	**Total**	2500	**Positive**	1500	**Total**	2500



RESULTS

Results formulated on radiological grounds with X-rays and HRCT findings and its clinical correlation .AS HRCT plays important role in detection of Pul TB in whom chest radiograph is normal or inconclusive, in the determination of disease activity , detection of complications and plays a pivot role in surgical planning. Clearance of chest radiograph -20% of patients of less than 25 yrs with calcification as compared to 40% in patients of more than 40yrs old.The later group also had signs of increase rate of pleural thickening, Increase fibronodular opacities, cavitation. Males had more significant rate of chest radiograph clearance than females. Healing on Chest radiograph was more frequent in patients with good compliance to drug therapy compared to those with poor compliance. Persistence cavitation was seen in 30% cases with past h/o TB and only 12% with no such history.1800 were of category 1pts.Mostly male pts with age gp 30-60 yrs and female pts with younger age gp in category 1.

Clinicoradiological correlation was done in smear +ive and -ive pts. More pts presented with pulmonary as compared to extra-pulmonary manifestations.The later group also had signs of increase rate of pleural thickening, Increase fibronodular opacities, cavitation. Males had more significant rate of chest radiograph clearance than females. Healing on Chest radiograph was more frequent in patients with good compliance to drug therapy compared to those with poor compliance. Persistence cavitation was seen in 30% cases with past h/o TB and only 12% with no such history.1800 were of category 1pts.Mostly male pts with age gp 30-60 yrs and female pts with younger age gp in category 1.

DISCUSSION

Chest X-Ray findings that can suggest active TB of the following findings must submit sputum specimens for examination.

1. Infiltrate or consolidation -
2. Any cavitary lesion - Lucency (darkened area) within the lung parenchyma, with or without irregular margins
3. Nodule with poorly defined margins - Round density within the lung parenchyma.
4. Pleural effusion .
5. Hilar or mediastinal lymphadenopathy - Enlargement of lymph nodes in one or both hila or within the mediastinum, with or without associated atelectasis or consolidation. Linear, interstitial disease (in children only) - Prominence of linear, interstitial (septal) markings.
6. Other - Any other finding suggestive of active TB, such as miliary TB. Miliary findings are nodules of millet size (1 to 2 millimeters) distributed throughout the parenchyma.

Chest X-ray findings that can suggest inactive TB: This category includes findings that are suggestive of prior TB, that is inactive. Assessments of the activity of TB cannot be made accurately on the basis of a single radiograph alone. If there is any question of active TB, sputum smears must be obtained. Therefore, any pt might have findings grouped in this category, but still have active TB as suggested by

- The presence of signs or symptoms of TB .
- Sputum smears positive for AFB.

1. Discrete fibrotic scar or linear opacity—Discrete linear or reticular densities within the lung.
2. Discrete nodule(s) without calcification—One or more nodular densities with distinct borders and without any urrounding airspace opacification. Nodules are generally round or have rounded edges. These features allow them to be distinguished from infiltrates or airspace opacities. To be included here, these nodules must be noncalcified. Nodules that are calcified are included in the category "OTHER X-ray findings, No follow-up needed".
3. Discrete fibrotic scar with volume loss or retraction.
4. Discrete nodule(s) with volume loss or retraction—One or more nodular densities with distinct borders and no surrounding airspace opacification with reduction in the space occupied by the upper lobe.
5. Other—Any other finding suggestive of prior TB, such as upper lobe bronchiectasis. Bronchiectasis is bronchial dilation with bronchial wall thickening.

COMPLICATIONS

Early: Paratracheal and mediastinal lymphadenopathy, consolidation, cavity formation.
Late: Tuberculoma, bronchial stenosis, bronchiectasis, broncholithiasis, aspergiloma, broncho-oesophageal fistula and fibrosing mediastinitis.

SUMMARY

The chest film is the mainstay in the radiological evaluation of suspected and proven pulmonary TB.CT is useful for clarifying confusing findings and has been conclusively shown to have a significant impact on patients management. Micro nodules, nodules ,tree in bed appearance, consolidation and cavities are most common radiological findings in active Pul TB. Category TB is increasingly disease of adults. It manifests *as* a parenchymal consolidation in any pulmonary lobe or segment. The most characteristic feature is lymphadenopathy. On enhanced CT chest hilar and mediastinal nodes with central hypodense area suggestive of dx.

Category 2 TB typically manifest radiologically as a heterogenous cavitatory lesions, bullae formation, bronchiactasis, and emphysematous changes whereas lymphadenopathy is rare. Radiological stability for 6months and -ive sputum culture is the best indicator of inactive disease. Cavitation is the most important radiological finding in category 2 Pulmonary TB. Cavitation implies a high bacillary burden, increase infectivity and is associated with numerous complications. Tuberculous pleurisy is common in category 1. PI effusion is unilateral, large and self limited. The pleural fluid is usually serous exudates with marked lymphocytes, fluid culture are -ive frequently. The disappearance of tree in bed appearance, PI effusion and presence of fibrotic change shows effectiveness of treatment. Correct dx and therapy is important as untreated patients are at high risk for pulmonary reactivation. Military TB is more common in primary disease in elderly.

CONCLUSION

Old age, female gender, delayed dx, poor compliance to t/m and +ive h/o TB were associated with poor radiological outcome.Smear positive cases are 4-20 times more infectious,untreated smear +ive cases infect 10-14 pts/year

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