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Pulmonary Medicine

PROFILE OF LOWER LUNG FIELD TUBERCULOSIS

Dr. A. Ayyappa — Associate Professor, Department of Pulmonary Medicine, Andhra Medical College, Government hospital for chest and CD, Chinna waltair, Visakhapatnam- 530013, Andhra Pradesh, India.

Dr. G. Sambasiva Rao* — Professor and HOD, Department of Pulmonary Medicine, Andhra Medical College, Government hospital for chest and CD, Chinna waltair, Visakhapatnam- 530013, Andhra Pradesh, India. *Corresponding Author

Dr. B. M. S Patrudu — Assistant Professor Department Of Pulmonary Medicine, Andhra Medical College, Government Hospital For Chest And Cd, Chinna Waltair, Visakhapatnam- 530013, Andhra Pradesh, India.

ABSTRACT

BACKGROUND: Tuberculosis, an infectious disease mainly caused by Mycobacterium tuberculosis, affects commonly the upper lung fields. But involvement of lowerlung fields is not uncommon resulting in great diagnostic confusion.

METHODS : This study was conducted on 50 patients of 15 to above 60 years age admitted in GHCCD, Visakhapatnam, Andhra Pradesh from September 2015 to August 2017.Patients were selected basing on the chest x rays and were subjected to sputum test for AFB; gene x pert MTB/RIF assay was done in some cases where sputum for AFB was negative but clinical features strongly suggestive of pulmonary TB.

RESULTS: Treatment was started in all 50 patients of whom 42 patients completed treatment and among them 40 were cured and 2 were failures with success rate of 95.2%.

CONCLUSION: LLF TB can sometimes be confused with pneumonias located at that area causing undue delay in diagnosis and treatment. Response to treatment is good in all cases.

KEYWORDS : lower lung field tuberculosis, chest x ray, sputum for AFB

INTRODUCTION

LLFTB is defined as "*tuberculosis disease found below an imaginary line traced across the hila including the parahilar regions on a standard PA chest roentgenogram*"[1]. In a PA radiograph of the chest LLF includes the middle lobe and lingula in addition to the lower lobes [2]. In earlier reports [3,4] the term "basal TB" was frequently used. However, with the advent of lateral radiographs of the chest, the term "lower lobe TB" is used by various authors [5,6]. The prevalence of LLFTB in studies reported from India was observed to be higher than that reported in western studies [2]. The most likely explanation for the development of the LLFTB is transbronchial perforation of a hilar lymph node resulting in spread to the adjacent lung. Thus LLFTB occurs as a continuation of primary TB infection or soon afterwards in the post primary period. This explanation is consistent with the high incidence of endobronchial involvement and with reported clinical and radiological observations [7]. LLFTB appears to be more common in patients receiving corticosteroids, patients with hepatic or renal disease, diabetes mellitus, pregnancy, silicosis and kyphoscoliosis [1,8,9]. Tripathy and Nanda noted hemoptysis in 2/3 rds of cases [10]. Even though sputum for AFB examination is the simplest way to diagnose LLFTB, not all cases give positive results and isolation of TB bacilli by culture is time consuming. Hence, rapid identification which is essential for early treatment initiation, improved patient outcome and more effective public health interventions relies on nucleic acid amplification techniques.

AIMS AND OBJECTIVES

1. To study the clinical and radiological profile of LLFTB.
2. To study the risk factors for LLFTB
3. TO know the sputum for AFB status at the time of diagnosis.

MATERIALS AND METHODS

This study consists of 50 patients admitted in the Department of Pulmonary Medicine, Govt. Hosp. for Chest and CD affiliated to Andhra Medical College, Visakhapatnam during the period from Sept 2015 to Aug 2017.

INCLUSION CRITERIA:

1. Patients were selected on the basis of disease confined to one or both lower lung fields on PA views of chest x rays.
2. CXR suggestive of pulmonary TB plus clinical and radiological improvement with anti-tuberculosis therapy.

EXCLUSION CRITERIA:

1. Cases of either ipsilateral or contralateral involvement of both upper and lower lung fields.
2. Pleural effusion and pleural thickening, unless associated with parenchymal lesions in the area involved.

Following tests were done to confirm the tuberculosis etiology for the x ray findings:

sputum test for AFB by ZN technique for which 2 samples were collected or by 24 hrs sputum for AFB or induced sputum for AFB or sputum for CBNAAT. Sputum for Grams stain, culture and sensitivity, sputum for malignant cells were done to detect any other non tuberculous etiology.

CXR PA view was taken in all cases and Mantoux test was done in sputum negative cases. The following investigations were done in all patients:

- complete blood picture, blood urea, serum creatinine, RBS
- HIV testing after informed consent

HRCT, pleural fluid analysis and fibreoptic bronchoscopy were done in selected cases. Follow up of patients was done till the completion of treatment course.

RESULTS:

Table 1: Age-wise distribution of patients with LLFTB

Age(in years)	Number Of cases	Percentage
15-20	09	18%
21-30	10	20%
31-40	07	14%
41-50	16	32%
51-60	05	10%
>60	03	6%
Total	50	100%

The age group of patients varied from 15 to 70 years. The maximum number of 16 cases(32%) were in 5 th decade of life, followed by 10(20%) in 3rd decade and 9(18%) in 2nd decade of life.

Table 2: sex distribution

Sex	Number of cases	Percentage
Male	18	36%
Female	32	64%
Total	50	100%

There was female preponderance over males.

Table 3: clinical presentation of LLFTB

Symptom	Number of cases	Percentage
Cough	48	96%
Fever	48	96%
Anorexia	43	86%
Weight loss	43	86%
Breathlessness	25	50%
Hemoptysis	10	20%
Chest pain	7	14%

Majority of patients 48(96%) presented with cough and expectoration and fever; followed by anorexia and weight loss 43(86%), breathlessness 25(50%), hemoptysis 10(20%) and chest pain 7(14%).

Table 4: Risk Factors Associated With Llftb

Risk factor	Number of cases	Percentage
D mellitus	15	30%
HIV	8	16%
Alcoholism	5	10%
Past h/o PTB	2	4%
Others	6	12%

In the present study risk factors noted were D mellitus in 15 (30%) patients , 8(16%) were HIV, 5(10%) were alcoholics, 2(4%) had previous history of Pulmonary TB; 6 (12%) patients were associated with other risk factors like advanced age, renal disease and kyphoscoliosis.

Table 5: radiological presentation in LLFTB patients

Radiological presentation	Number of cases	Percentage
Consolidation	31	62%
Infiltrates	25	50%
Cavitation	10	20%
Pleural effusion	06	12%
Hilar lymphadenopathy	04	8%
Mixed pattern	24	48%

In the present study, consolidation 31(62%) was the main radiological presentation, other presentations include infiltrates 25(50%) , cavitation 10(20%), mixed pattern in 24(48%) cases.

Table 6: diagnosis of LLFTB

Investigation method	Number of cases	percentage
Sputum smear microscopy	23	46%
Pleural fluid analysis	06	12%
Bronchial washings for AFB	10	20%
Sputum CBNAAT	07	14%
HRCT chest + trial ATT	04	08%
Total	50	100

In the present study, diagnosis of LLFTB was made by sputum smear microscopy being positive for AFB in 23 (46%) of cases, by pleural fluid analysis in 6 (12%), bronchial washings for AFB in 10(20%), sputum CBNAAT in 7(14%) of cases.

DISCUSSION

The present study consists of 50 patients who were identified as pulmonary tuberculosis in the lower lung field and designated as LLFTB. The age group of the patients ranged from 15 to >60 years. More than half of the patients fell in 5th ,3rd and 2nd decades put together. In Zuber Ahmad et al study [11], sputum was positive for AFB in 304 (65.38%) patients (ZN method-280, culture -24) which was significantly higher than in patients with classical upper lung field disease (48.02%). Higher bacillary load due to pooling of mucus in lower lung field because of less efficient drainage of sputum may be attributed to higher AFB positivity. Empirical anti-tuberculous therapy in high index of suspicious cases tuberculosis should be considered a diagnostic possibility, in patients with "lower lung field pneumonia". The response to treatment with anti-tuberculosis drugs was excellent with complete resolution of radiological opacities and clinical recovery in our study. All patients were treated as per RNTCP guidelines. In our study of the 50 patients, 42(84%) completed treatment, 7(14%) were lost to follow up and 1(2%) patient died. Out of 42(84%) patients who completed the treatment course, 40(80%) were cured and 2(4%) were failures. Success rate was 95.2%. In Zuber Ahmad et al study [11] out of 79 patients who completed their treatment 274(98.21%) were declared cured and 5(1.79%) turned out to be MDR cases.

SUMMARY

Profile of fifty cases of LLFTB was studied with reference to symptomatology, radiological location of lesion, associated risk factors and treatment outcome. Age group of patients ranged from 15 to 70 years. The incidence of LLFTB is more common in females (64%) when compared to males (36%). The presenting symptoms were cough (96%), fever (96%), anoxia (86%), weight loss (86%), hemoptysis (20%) and chest pain (14%). The cases were diagnosed by using sputum smear microscopy (23 cases), sputum CBNAAT (7), bronchial washings for AFB (10), pleural fluid analysis (6), HRCT+Trial ATT (4).

CONCLUSION:

To conclude, females are more prone to LLFTB; patients with comorbidities like D.mellitus, HIV, alcoholism have a higher chance of developing LLFTB. There is not much difference in clinical presentation of LLFTB from apical TB. Special investigations like CBNAAT, LPA, FOB are often necessary to secure bacteriological proof of tuberculosis in doubtful cases. Trial therapy with ATT in unresolved pneumonia may help to diagnose LLFTB when all other investigations failed to diagnose it.

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