A Clinical Study of Post-tubercular Bronchiectasis

ABSTRACT

Pulmonary tuberculosis (PT) Tuberculosis (TB) is one of the most important communicable diseases in the world. India is the highest PT TB burden country accounting for one-fifth (21%) of the global incidence (9.4 million cases). This problem is further magnified by the after-effects of the disease—post-tubercular bronchiectasis (PTBX). As a result, the sufferers run from pillar to post with sinister symptomatology. Some of them are retreated with antituberculous treatment, although there is no definite indication. Katuri Medical College is situated in the rural Guntur surrounded by number of dusty industries like granite, quarrying, cotton crop and mills, tobacco, capsicum crop, spices besides being an agricultural area on the brink of mighty Krishna River flowing at a length of more than 700 km through three states of Karnataka, Maharashtra and Andhra Pradesh. As a result the flora and fauna is complex. Workers in this area report with variegated granulomatous lung diseases to the faculty of Pulmonology. Over and above the incidence of smoking in both sexes is rampant. The final outcome in all these morbidities is bronchiectasis. Quite a few of them have had treatment for pulmonary TB in the past. With this background the present study was undertaken to find out the vagary of post-tubercular bronchiectasis ruling out the extrinsic atmospheric factors.

Keywords: Acid fast bacilli (AFB), Anti tuberculosis treatment (ATT), Direct observed treatment Short course (DOTS), Fibreoptic bronchoscopy (FOB), Pulmonary tuberculosis (PT), Post tubercular bronchiectasis (PTBX)

INTRODUCTION

The coexistence of bronchiectasis and TB Pulmonary tuberculosis (PT) has been known since the time of Laennec[1]. He stated that bronchiectasis may appear in the course of fibrocaseous TB (PT) and be unrecognized because of the predominant symptoms of the latter TB. It may also develop as a sequel to inactive TB (PT) Bronchiectasis may develop as a result of PT TB involvement of the bronchial wall and subsequent fibrosis. Bronchiectasis is seen in 30–60% of patients with active post-primary form. TB and in 71–86% of patients with inactive disease. There is a very thin line of separation of symptomatology between active pulmonary disease. TB (PT) and post-tubercular bronchiectasis (PTBX). Thus, the tertiary care unit of Katuri Medical College and Hospital caters for symptomatics of both PT and PTBX. Hence, this study is undertaken to assess the status of PTBX after approval from institution ethical committee.

AIMS AND OBJECTIVES

The aim and objectives of the present study are as follows:

1. Decide the pattern of PTBX in chest symptomatics attending the department of Pulmonology, Katuri Medical College and Hospital.

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2. Find the modality of relief with conservative treatment or radical surgery.

MATERIALS AND METHODS
This study was conducted on consecutive sixty (n=60) chest symptomatics visiting the faculty of Pulmonary medicine, Katvari Medical College and Hospital, Guntur, Andhra Pradesh between August 2012 to August 2013.

Inclusion criteria
1. Those who completed successful Anti-TB Treatment (ATT).
2. Symptomatology included (a) cough with expectoration-recurrent (b) dyspnoea (c) fever (d) hemoptysis.
3. Thorough clinical examination eliciting the signs of bronchiectasis viz fibrosis, consolidation and coarse crepitations.
4. Sputum for acid fast bacilli (AFB) -spot and overnight specimen done and only sputum AFB negative cases were include

Exclusion criteria
1. Sputum positive for AFB status
2. Extremely moribund conditions
3. Unwilling and non-cooperative clientele.

Routine blood picture, radiological investigations, such as chest X-ray postero anterior view A view, high resolution computer tomography (HRCT), Electrocardiogram (ECG), ECG, 2 dimensional echo cardiogram 2D-ECHO, Pulmonary function test PFT were done to know the radiological extent and cardiopulmonary status. Further fibroptic bronchoscopy (FOB) was done to rule out any endobronchial pathology and microbiological milieu. Arterial blood gases (ABG) analysis was done whenever required.

RESULTS
Sample size was 60 subjects (n=60) with male–female ratio of 35:25 (58%:42%), with in the age range of 17–69 years, of which majority were in the 31–50 years group (43.3%).

Initial presenting symptoms were productive cough (95%), dyspnoea (90%) and hemoptysis (35%). History of smoking was noted in 53% of total sample. It is worth noting that minority of the females were also smokers. Chronic obstructive pulmonary disease (COPD) (28%) is the major co morbidity associated with PTBX followed by hypertension (12%), type 2 diabetes (5%) and coronary artery disease (5%) (Fig.1).

Majority of patients had bronchiectatic changes which were identifiable on chest X-ray (53%). One-fourth patients had fibrosis (25%). Features of destroyed lung were evident in 9 cases (15%). Fungal ball was seen in 4 cases (7%). Bilateral involvement was seen in 25 cases (42%) followed by right predominance (33%) (Fig.2).
4. Cystic bronchiectasis: 7 cases (12%)
5. Central bronchiectasis: 4 cases (6%)

Thus, it can be seen that non-specific traction bronchiectasis was the end result of effective chemotherapy.

Figure 3: PTBX types on HRCT chest

Also nearly half of the clientele had right upper lobe (RUL) bronchiectasis (48.3%). Left upperlobe (LUL) and left lower lobe (LLL) were involved equally in about one-third of patients (31.7%), which is in consensus with the natural history of PT pulmonary TB (Fig.4).

Figure 4: Lobar predominance in PTBX

Fibroscopic microbiology milieu revealed Staphylococcus aureus (30%), Klebsiella pneumoniae (22%), Pseudomonas aeruginosa (12%), Candida spps (8%), Mycobacterium TB Mycobacterium tuberculosis (MTB) (3%). Fifteen cases (25%) of fibroscopic sputum were sterile (Fig.5).

Figure 5: Microbiological milieu

FOB revealed predominantly inflammatory changes with profuse secretions and distorted architecture. Post-bronchoscopy sputum turned positive for AFB in two specimens. Thus, it indicates the importance of fibroscopy in sputum negative cases.

Spirometry revealed mixed pattern in 43 cases (72%), obstructive defect (18%) and restrictive pattern (10%) of the clinical sample.

Therapy wise majority of them (91.6%) were treated with appropriate antibiotics and postural drainage. Furthermore three subjects needed left side pneumonectomies and two right upper lobectomies.

DISCUSSION

The panorama of Pulmonary tuberculosis (PT) pulmonary TB is perplexed by sinister symptom complex of granulomatous lung diseases. Over and above, it is compounded by the felony of complications and sequelae of PT pulmonary TB—even after successful or inadequate treatment, baffling the clinician. The pedagogy of this white plague mentions about the complications and sequelae but no panacea is visible in the nearby vicinity. This centre encounters almost all granulomatous lung disease viz occupational lung diseases due to quarrying, graphite, cotton mills embedded with various agricultural crops. Thus, Pulmonary Kochs disease can be a comanifest form
The classical bronchiectasis is manifested by irreversible dilatation of bronchi, destruction of elastic and muscular elements of bronchial walls. Furthermore this is a bonhomie milieu for secondary infections causing recurrent pneumonias. Thus, Angrill et al. reported *Haemophilus influenza* and *Pseudomonas* species being the most common bacterial flora in this type of bronchiectasis[2], where as the present epithet of PTBX divulged *Staphylococci*, *Klebsiella* and *Pseudomonas* which are common microbes found in Indian scenario and are treatable.

The pathogenesis of bronchiectasis in phthisis is multifactorial–granulomatous inflammation, caseation necrosis, scarring, peribronchial stenosis, pooling of secretions, traction due to fibrosis are few of the many. More often than not bronchiectasis is expected with Koch’s aetiology in the upper lobes. Thus, in this prospective study, the bronchiectasis was seen predominantly in upper lobes (48%). Brock et al. found upper lobe involvement in 22% cases[3]. The middle lobe involvement in his series was 64% compared to the present epithet of 18%. However, the census category is different.

The smoking habit along with the occupation in dusty environment further aggravated the quartet symptomatology of bronchiectasis in nearly half of the patients.

The major complications were corpulmonale in seven cases (11.6%), pneumothorax in three patients (5%). Similar presentations were reported by Jones et al. in active PT TB[4]. This is worth mentioning because pneumothorax could also be an active manifestation of the disease process. pulmonary TB.

Rajasekharan et al. adumbrated pulmonary TB was the leading cause for destroyed lung in 83% of his series (n=64). In this various types of conglomeration were observed[5]. In the present series destroyed lung was found in 16% of cases. This may be due to the fact that the Direct Observed Treatment- Short Course (DOTS) has revolutionised the treatment perspective then and now. Out of them, surgery was done in 8% cases (3 left pneumonectomies, one each of right and left lower lobectomies).

The post-surgery specimens did not show activity of pulmonary TB. However, one pneumonectomy sample revealed acid fast bacillus at a later stage. This emphasises the role of surgery in this category.

The fungal colonisation was seen in 7% of cases which is in contrast to the observations of Panda et al. who found 50%(15out of 29)[6].

Active pulmonary TB by way of post-bronchoscopy sputum for AFB was found in two cases (3%). Thus, bronchoscopy was invaluable investigation in smear negative TB[7].

**CONCLUSION**

- PTBX is a treatable condition as envisaged. Mild traction bronchiectasis and super added secondary infections can be tackled with symptomatic antibiotics (42%) are treatable (42%). This shows case finding, case holding on successful completion by DOTS prevents horrendous complications and sequelae.
- HRCT chest is invaluable in pinpointing the diagnosis of PTBX. This also fits into the existing categories of bronchiectasis. Probably this can be fortified with contrast study.
- FOB and post-scopy sputum examination is an implicit tool in ruling out the activity.
- The complications and sequelae are hyperbolic due to comorbidities of COPD(28%).
- Only minority(8%) needed radical surgery and 3% need active treatment for pulmonary TB.

**ACKNOWLEDGEMENT**

I would like to thank all the authors and patients involved in this study.

**REFERENCES**


