

CYTOPATHOLOGICAL DIAGNOSIS IN TRANS BRONCHIAL LUNG BIOPSY IN SPUTUM SMEAR NEGATIVE SUSPECTED PULMONARY TUBERCULOSIS CASES

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ABSTRACT

This study has been conducted in OPD of Department of TB and chest diseases and those admitted in TB and Chest ward of SRN Hospital, Allahabad. A total 33 patients with clinical and radiological features consistent with pulmonary tuberculosis were studied. The maximum number 11 (33.33%) of patients belongs to 20-29 years age group followed by 40-49 years age group. out of total 33 patients, 22 (66.66%) were male and 11 (33.33%) were female. Maximum number 23 (69.69%) of patients belongs to lower middle class, 8 (24.24%) from middle class and 1 (3.03%) each from upper middle and lower class. Trans Bronchial Lung Biopsy was one in patients with definite intraluminal abnormalities. Presence of caseating epithelioid granuloma was considered positive for Tuberculosis. Out of 13 patients, epithelioid granuloma was seen in 2 (15.38%) patients, malignancy in 3 (23.07%) patients and nonspecific inflammation in 8 (61.54%) patients. It was concluded that Trans Bronchial Lung Biopsy specimen showed caseating epithelioid granuloma in 2 (13.13%) cases, malignancy in 3(23.07%) cases and nonspecific inflammation in 8(61.54%) cases.

KEYWORDS: Trans Bronchial Lung Biopsy, Pulmonary Tuberculosis, Sputum Smear Negative

The last decade of the twentieth century has been a witness to the deadly synergy between a bacterium known for about centuries and a virus known for about few decades. At a time, when the disease was fading away from the public health agenda, the twin disaster of dual infection with human immunodeficiency virus (HIV) infection and tuberculosis has led to a resurgence of this ancient disease. In March 1993, the WHO took an unprecedented step and declared tuberculosis as a global emergency. This was the first time the WHO had even singled out a disease in this manner.

India's fight against tuberculosis is nearly a century old. It began as a sanatorium based activity founded by voluntary organization which soon enlarged its scope to a community based public health programme, aided by the proactive role of the government. It evolved from purely preventive and educative activities to include curative services. A scientifically conceived National Tuberculosis Control Programme was developed and implemented in 1962. Under RNTCP sputum microscopy is used as primary means of diagnosis of pulmonary tuberculosis. All patients with chest symptoms (i.e. three weeks of cough) or other symptoms suggestive of pulmonary tuberculosis are advised to undergo three sputum examination for AFB. Those with two or three smears positive for AFB are treated with anti-tuberculosis therapy. But those with one sputum smear positive or three smears negative for AFB are further evaluated by chest X-ray, if CXR features are suggestive of tuberculosis, anti-tuberculosis, treatment is started.

Though sputum smear microscopy is highly specific test but it has low sensitivity. It can diagnose only 50-70% of active pulmonary tuberculosis cases leaving a larger number of sputum smear negative pulmonary tuberculosis cases. In these patients chest X-ray is performed but Chest X-ray has high sensitivity but low specificity. So in number of patients over diagnosis of tuberculosis is made. In these cases sputum culture is recommended, which takes long time and unnecessarily delays appropriate treatment.

Therefore, it is vital to provide opportunities for a broader diagnostic approach, which can make early diagnosis of pulmonary tuberculosis. So that correct therapy could be administered.

Here came the role of fiberoptic bronchoscopy. Flexible fiberoptic bronchoscope was discovered by Ikeda in 1968. The advantage of flexible fiberoptic bronchoscope is direct visualization of tracheobronchial tree, better maneuverability, collection of samples directly from the site of lesion, patient's comfort and minimal complications.

Early definitive diagnosis of sputum smear negative pulmonary tuberculosis cases is a clinical challenge. The present study is undertaken to evaluate the "to make cytopathological diagnosis in Trans Bronchial Lung Biopsy obtained by flexible fiberoptic bronchoscope in sputum smear negative suspected pulmonary tuberculosis cases".

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MATERIALS AND METHODS

This study has been conducted in OPD of Department of TB and chest diseases and those admitted in TB and Chest ward of SRN Hospital, Allahabad. A total 33 patients with clinical and radiological features consistent with Pulmonary tuberculosis were studied. All patients had three samples (two spot and one morning) of sputum negative for AFB at microscopy centre under RNTCP. Detailed clinical history and thorough clinical examination in every patients was carried out with more emphasis over respiratory system.

All the patients were subjected to the following investigations.

Routine

- Haemogram: Hb, TLC, DLC, ESR, Platelet count, BT/CT
- Urine: Routine examination and Microscopic examination
- Chest X-ray: PA-view and Lateral view (if necessary)
- Sputum for AFB staining in RNTCP lab (two spots and one morning)

Special Investigation

- ELISA for HIV I and II
- Serum urea and creatinine
- Blood sugar, fasting and post-parandial
- Electro-cardiogram (ECG)

A thorough examination of bronchial tree was carried out and bronchial aspirate (BA) bronchoalveolar lavage (BAL) bronchial brushing,transbronchial lung biopsy(TBLB) and post bronchoscopy sputum(PBS) were collected. The specimen obtained was placed on slides for Ziehl-Nielsen stain. Bronchial biopsy was performed on abnormal looking mucosa and stained with Eiosin-hematoxylin and Ziehl- Nielsen stains.

Trans-bronchial Lung Biopsy

The flexible bronchoscope is lodged in the segment to be biopsied, the forceps passed down the scope till resistance is felt or till the patient winces with pain. At this point the forceps is withdrawn, opened and advanced and biopsy bites taken. The goal of the biopsy is to allow the forceps to cut the lung parenchyma rather than forcibly

tearing the tissue from the biopsy site. Careful attention should be paid to the patients response as this would make us be prepared for any complication of the procedure.

The pieces of tissue from the blade should be removed with a needle or toothpick and transferred to a bottle containing 10% formalin

Usually multiple biopsies are done. For a centrally located lesions, 3-4 bites would suffice and for a peripheral lesions, 6-8 bites would suffice.

RESULTS

The youngest patient was 18 years of age and the oldest was 73 years old. The maximum number 11 (33.33%) of patients belongs to 20-29 years age group followed by 40-49 years age group. The minimum number 1 (3.03%) of patients belong to 10-19 years age group (Table, 1).

Table 1: Age Distribution

Sl. No.	Age Group (years)	No. of patients	Percentage (%)
1	10-19	1	3.03
2	20-29	11	33.33
3	30-39	4	12.12
4	40-49	7	21.21
5	50-59	5	15.15
6	60-69	3	9.09
7	70-79	2	6.06
	Total	33	100%

Sex distribution among study group out of total 33 patients, 22 (66.66%) were male and 11 (33.33%) were female.

There was distinct male preponderance with male, female ratio of 2:1. occupational distribution among 33 patients, with maximum number of patients 11 (33.33%) were housewife followed by shopkeeper 8 (24.24%) and labourer 5 (15.15%) and minimum number, of patients 2 (6.06%) were students.

Maximum number 23 (69.69%) of patients belongs to lower middle class, 8 (24.24%) from middle class and 1 (3.03%) each from upper middle and lower class. None of the patent was of upper class.

Maximum number 25 (75.75%) patients presented with cough. Out these 25 patients 17 (51.51%) patients had expectoration and 8 (24.24%) had dry cough. This was

followed by fever 16 (48.48%) and haemoptysis 15 (45.45%) patients. Hoarseness of voice was present in 3 (9.09%) patients (Table, 2).

Table 2: Distribution according to symptoms present (n-33)

Symptoms	No. of patients	Percentage
Cough with expectoration	17	51.51%
Dry Cough	8	24.24%
Fever	16	48.48%
Haemoptysis	15	45.45%
Chest pain	12	36.36%
Breathlessness	12	36.36%
Decreased appetite	15	45.45%
Hoarseness of voice	3	9.09%

Trans Bronchial Lung Biopsy was one in patients with definite intraluminal abnormalities. Presence of caseating epithelioid granuloma was considered positive for Tuberculosis. Out of 13 patients, epithelioid granuloma was seen in 2 (15.38%) patients, malignancy in 3 (23.07%) patients and nonspecific inflammation in 8 (61.54%) patients in table 3.

Table 3: Cytopathological results of trans-bronchial lung biopsy (TBLB) samples

Cytopathology	No. of patients (13)	Percentage
Caseating Epithelioid granuloma	2	15.38%
Malignancy	3	23.07%
Non-specific inflammation	8	61.54%
Total	13	100

DISCUSSION

Maximum 22 (66.66%) cases were in age group of 20-49 years age group . This was also observed by Swarnakar J.S. et al 1987, (67.2%) and Purohit, S.D. et al 1983 (50%).

Males, 22 (66.66%) predominates over 11 (33.33%) females with male, female ratio of 2:1.This was also observed by Purohit S.D. et al 1983 (2.3:1), Swarnkar J.S. et al 1987 (3.5:1).

Out of 33 patients, 20 (60.60%) patients belongs to rural area while 13 (39.39%) patients from urban area. With

Rural, Urban ratio of 1.5:1. Less number of urban patients may be due to their visit to various Non-Government Organisations.

Maximum number 23 (69.69%) of patients were of lower middle economic status. This was also observed by Pamra and Mathur et al (66%).

Most common symptom was cough with or without expectoration in 25 (75.75%) patients while fever and haemoptysis in 16 (48.48%) and 15 (45.45%) patients respectively. This was observed by Swarnkar J.S. et al 1987 with cough with or without expectoration in 100%, fever 54% and haemoptysis in 43.5% patients. Kulpati D.D.S. et al 1986, noted cough in 54.54%, fever in 51.51% patients but haemoptysis in 15.15% patients. Purohit S.D. et al 1983 noted cough with or without expectoration in 100%, fever in 64% and haemoptysis in 36% patients.

Comparative analysis: Cytopathological yield of Trans Bronchial Lung Biopsy

Author	Year	No. of Patients	Caseating epithelioid granuloma	%
Kulpati D.D.S; et al	1986	33	4	12.12 %
Willicox PA, et al	1986	41	28	68 %
Jaiswal AK, et al	1989	20	2	10 %
Pant K, et al	1990	22	10	45.45 %
Charoenratana kaul et al	1995	40	7	17.5 %
Panda B.N, et al	1995	100	10	10 %
Present study	2007	13	2	15.38 %

Shows that cytopathological yield of TransBronchial Lung Biopsy ranges between 10%-68%. Our results lies in this range and are comparable to most of the studies. Willicox PA et al 1986 and Pant K et al 1990; results are better than present study. Because most of their cases have intraluminal lesions and they included miliary (far advanced) tuberculosis patients. Our study included only one (3.03%) patient with miliary shadow. Various factors influenced the yield of Trans Bronchial Lung Biopsy specimen like number of biopsies taken, site of

biopsy taken, processing of biopsy sample and the stage of the tubercular lesions.

CONCLUSION

It was concluded that Trans Bronchial Lung Biopsy specimen showed caseating epithelioid granuloma in 2 (13.13%) cases, malignancy in 3(23.07%) cases and nonspecific inflammation in 8(61.54%) cases.

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