



**Original Article:**

**Bronchoscopic evaluation and final diagnosis in patients with chronic non productive cough with normal Chest X ray**

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**Abstract:**

When a proper detailed history, clinical examination, chest X ray and sputum analysis does not yield a definite diagnosis for the cause of chronic cough, bronchoscopy is indicated. We did a descriptive study among 39 patients who underwent bronchoscopic evaluation for chronic cough (more than 4 weeks) with normal chest X ray and without a prior definitive diagnosis. 16 out of 39 patients were diagnosed to have tuberculosis on analysis of the bronchial washings. 6 patients (66.67%) with left upper lobe mucosal inflammation were AFB smear positive. 5 patients ( 31.25 %) with normal bronchoscopy were AFB smear positive. 4 out of 5 patients (80 %) with bilateral upper lobe mucosal inflammation were AFB smear positive. Pulmonary tuberculosis can present with chronic non productive cough and normal chest X ray. Bronchoscopy is helpful in establishing the diagnosis. When bronchoscopy shows bilateral or unilateral upper lobe bronchial mucosal inflammation, possibility of tuberculosis is high. Bronchoscopy can be normal in some patients with pulmonary tuberculosis with normal chest x ray and chronic non productive cough. The key message is that early pulmonary tuberculosis can present with chronic non productive cough and normal chest X ray without any other symptoms suggestive of tuberculosis. Bronchoscopy is helpful in establishing the diagnosis.

**Key Words:** Chronic non productive cough, bronchoscopy, pulmonary tuberculosis

**Introduction:**

Chronic cough is always a deceptive symptom. When detailed history, proper clinical examination, chest radiology and sputum analysis do not yield a definite diagnosis for the cause of cough, bronchoscopy is indicated. (1) Fiberoptic bronchoscopy is used for diagnosis of various pulmonary disorders. (2) This study was conducted to co- relate between chronic non productive cough and bronchoscopic finding of mucosal inflammation and incidence of tuberculosis in those patients.

**Materials and Methods:**

This was a descriptive study conducted among patients who underwent bronchoscopy between August 2004 and July 2008,

with chronic non productive cough of more than 4 weeks duration, with normal chest x ray without any prior definite diagnosis.

**Inclusion criteria:**

- Chronic non productive cough of more than 4 weeks duration.
- Normal chest x ray.
- No definite diagnosis for the cause of cough by history, clinical examination, sputum analysis.

**Exclusion criteria:**

- Prior definite diagnosis
- Medically unfit for bronchoscopy.

**Methods:**

The instrument used was fibre optic bronchoscope, Pentax FB15P. Accessories used were forceps for biopsy, bronchial brush for taking brushings and bronchoalveolar lavage. All patients undergoing bronchoscopy were assessed before the procedure. A detailed history and clinical evaluation was done. Investigations included routine blood examination, random blood sugar, blood urea, serum creatinine, screening for HIV and HbsAg, Sputum for AFB staining and routine culture and sensitivity, Sputum for cytology, ECG, X- Ray chest. Sputum was obtained by sputum induction by saline nebulisation. Patients were taken up for the procedure after overnight fasting. Informed consent for the procedure was taken. Skin sensitivity test for Lignocaine was done. Oxygen saturation was monitored during the procedure with pulse oximetry. 2% Lignocaine solution was instilled through the suction channel to anaesthetise the vocal cords. The bronchoscope was introduced either tran-nasally or orally. Supraglottic airways were first inspected for any abnormalities. Then vocal cords were examined for any growth or defective movement. The scope was then gently advanced carefully observing for any abnormalities of mucosa, growth, bleeding spots, luminal distortion or any other abnormality. Procedures were done only after careful complete visualisation of both sides. Biopsy, by using forceps or brushings were taken in indicated cases. Bronchial washings and bronchoalveolar lavage were also taken, in situations where it was indicated as per clinical suspicion. Usually combinations of forceps biopsy and brushings were taken, especially when there was intraluminal growth. When inflam-

matory lesions were found, combinations of brushings and washings were taken. Bronchial washings were sent for gram stain, bacterial culture and sensitivity, AFB staining, fungal smear, fungal culture and cytology for malignant cell in cases where malignancy was suspected. Biopsy specimens were sent for histopathological examination. Patients were permitted oral feeding after the return of normal sensation to the pharynx. They were observed for a few hours following the procedure for any complications. Results of the investigations and final diagnosis were collected. Data obtained from the case record were entered in computer and analyzed using MS Excel 2007.

#### Results:

In 16 patients (41.02%) bronchoscopy did not reveal any abnormality. In 5 patients (12.82%) bilateral upper lobe mucosal inflammation was detected. In 9 patients (23.08%) left upper lobe mucosal inflammation was detected. In 3 patients (7.69%) left lower lobe inflammation was detected. One patient each had right lower lobe and lingular, right middle lobe and right upper lobe mucosal inflammation. 2 patients (5.12%) had bronchogenic carcinoma.

In 16 patients bronchoscopic aspirate (41.02%) was AFB smear positive. In 18 patients (46.15%) bronchoscopic aspirate analysis did not yield any specific diagnosis. 3 patients had pyogenic bacterial infection and 2 patients had bronchogenic carcinoma. 6 patients (66.67%) with left upper lobe mucosal inflammation were AFB smear positive. 5 patients (31.25%) with normal bronchoscopy were AFB smear positive. 4 out of 5 patients (80%) with bilateral upper lobe mucosal inflammation were AFB smear positive.

#### Discussion:

Fibre optic bronchoscopy is indicated in the evaluation of chronic cough where the cause is not detected by other conventional methods.(1,3,4) Bronchoscopy is indicated in unexplained persistent cough to rule out bronchial lesions, bronchial distortion and foreign bodies.(1) It is also indicated when the character and nature of cough changes in a patient of chronic bronchitis with significant smoking history.(2,4) Bronchoscopy plays an important role in diagnosis of sputum negative pulmonary tuberculosis.(5) Indian data clearly indicates that evaluation of chronic cough is the most common indication for bronchoscopy.(4,6) In such settings inflammatory lesions of bronchial tree are the most common bronchoscopic findings.(4,6)

We have co-related an inspectory finding on bronchoscopy to a disease process. Only one study questioned the role of bronchoscopy in evaluation of chronic cough, which mentions that the algorithms utilized in the diagnosis of chronic cough advocate sequential investigations and treatment trials for asthma-like syndromes, post-nasal drip and gastro-oesophageal reflux disease, but that the role of bronchoscopy is unclear.(5)

We found that over all yield of bronchoscopy is 58.97%, which is well co-related to other Indian studies.(3) Recently, Foes et al analyzed the retrospective data of 616 bronchoscopy procedures done and reported a diagnostic yield of 57%.(5)

In our present study yield for tuberculosis was highest (80 %) when upper lobe mucosal inflammation or bilateral upper lobe mucosal inflammation were visible bronchoscopically. It is relatively high when compared to the Indian data (3) of yield of sputum negative pulmonary tuberculosis by bronchoscopically and of course western data.(7) Early pulmonary tuberculosis can present with chronic non productive cough and normal chest X ray. Bronchoscopy is helpful in establishing the diagnosis. When bronchoscopy shows bilateral or unilateral up-

per lobe bronchial mucosal inflammation possibility of tuberculosis is high.

However bronchoscopy can be normal in patients with pulmonary tuberculosis. In our present study 5 patients (31.25%) with normal bronchoscopy were AFB smear positive by BAL fluid analysis. This is well debated over the time.(8-13)

In our present study endobronchial tumour as a cause of chronic cough observed only in two patients (5.1%). Both Indian and western data is relatively high in this particular conclusion, however in that studies were endobronchial tumour was seen, patients had other symptoms like haemoptysis.

In our present study high yield of sputum AFB positive may be questioned as false positive. However bronchoscope was cleansed and sterilized after each bronchoscopy as per guidelines by trained staff. AFB smear was done by trained lab technician working in the DOTS center where quality is ensured.

All the bronchoscopies were done by a single experienced pulmonologist. Findings were regularly being entered in detail immediately after the procedure including patient symptoms, chest x ray findings, bronchoscopy findings, specimens taken and investigations sent after bronchoscopy. Reports of these were also entered in the same register. All these were being done regularly for every patient undergoing bronchoscopy with a view to analysis and studies in future.

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