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# Bronchocopy of Hemoptysis Patients with Normal Chest Roentgenograms

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**Abstract**
*Over the last two years from Nov 2015- Oct 2017 in the Dept. of Respiratory Medicine at Chandulal Chandrakar Memorial Medical College examine 43 patients with unexplained hemoptysis with normal chest roentgenograms underwent diagnostic fiberoptic branchoscopy (FBO). Ten patients were females with a mean age of 43.02 yrs. Normal findings were found in 26 patients and abnormal findings were observed in 17 patients with branchoscopy. Final diagnosis of malignancy in 3 patients, tuberculosis in 6 patients and pulmonary microfilariasis in 1 patient were found. All 3 malignancies were variety of squamous cell carcinoma. Above 3 patients were smokers and above 40 years of age. One of the carcinoma case was female passive smoker. However in any patients with persistent cryptogenic hemoptysis or who has no history of bronchitis elderly with high smoking index. FBO should be performed.*
*The interesting aspect of our study is an elderly female passive smoker was suffering from squamous cell carcinoma. Furthermore microfilaria was detected in bronchial washing of an young male patients, whose peripheral blood smear study was normal. All tuberculosis cases were above 40 years of age. On follow up one patient developed tubercular pleural effusion right-side. Hence on the basis of our result and findings we concluded that the FOB as a diagnostic aid for cryptogenic hemoptysis is useful.*
**Keywords**: *FBO, branchoscopy, hemoptysis, microfilariasis.*

## Introduction

Spitting up blood or blood-tinged sputum from the respiratory tract. Hemoptysis occurs when tiny blood vessels that line the lung airways are broken. Hemoptysis can be harmless such as from irritated bronchial tubes with bronchitis, or be serious such as from cancer of the lung. Hemoptysis is the coupling of blood from a source below glottis[(1)]. Hemoptysis is the coughing up of blood or blood-stained mucus from the bronchi, larynx, trachea, or lungs. This can occur with lung cancer, infections such as tuberculosis, bronchitis, or pneumonia, and certain cardiovascular conditions. Hemoptysis is considered massive at 300 ml. Hemoptysis is common clinical symptom of various disease i.e. 6-8% of chest OPD visit[(2)].
Depending on the underlying disease, hemoptysis is a result of several different pathologic mechanisms. Remember that the lung contains two separate vascular systems: the pulmonary and the bronchial vessels. Hemoptysis can occur with involvement of either. Infarction of lung tissue

with hemoptysis can occur in numerous diseases. Pulmonary emboli often present with hemoptysis as a result of ischemic pulmonary parenchymal necrosis. A similar ischemic necrosis can be seen in all idiopathic vasculitides involving the pulmonary vessels, including Wegener's granulomatosis. Infections causing blood vessel invasion with infarction include primarily Staphylococcus aureus, Pseudomonas aeruginosa, Aspergillus fumigatus, and the phycomycetes. Vascular engorgement with erosion is another mechanism of hemoptysis. This occurs within the bronchial capillaries in the mucosa of the tracheobronchial tree as a result of acute infection such as viral or bacterial bronchitis, chronic infection such as bronchiectasis, or a toxic exposure such as cigarette smoke. The shearing force of coughing can result in bleeding.

The role of fiberoptic branchoscopy in the evaluation of hemoptysis with abnormal chest roentgenogram is undisputed. The major debate is in patients with normal chest roentgenograms, should bronchoscopy be undertaken. The indication of hemoptysis either a normal or non localizing chest radiogram or more controversial. The yield of bronchoscopy may be increased in the presence of several clinical pictures especially when cancer is suspected including age above 40 years, bleeding duration exceeding one week, volume of expectorated blood greater than 30 ml, smoking history over 40 pack years and male gender[3-6]. Where to do bronchoscope in patients without these features remains a matter of individual discretion. Although some studies recommended that such patients may be observed following a negative sputum cytology and otolaryngoscopic examination[7].

Some investigators have reported occurrence of lung cancer among patients with hemoptysis and a normal chest radiograph range from 7-22%[8-10]. Whereas other did not detect any tumor in their series[11,12].

The present study aimed to bronchoscopy of hemoptysis patients with normal chest roentgenograms at Chandulal Chandrakar Memorial Medical College in Dept. of Respiratory medicine in collaboration with Pathology department.

## Materials and Methods

Total 43 patients with hemoptysis and normal chest roentgenogram in the Dept. of Respiratory Medicine at Chandulal Chandrakar Memorial Medical College Kachandur, Durg from Nov 2015- Oct 2017 underwent fiberoptic bronchoscopy. After detail history all patients were screened for bleeding diathesis, detailed ENT checkup, respiratory system examination (Sputum, cytology, smear for AFB and culture), chest roentgenograms and pulmonary function evaluation, minimum follow up care for 6 weeks.

The FOB was passed transnasally after 5ml of 4% Xylocain inhalation by nebulizer and by local spry. All lung segments were carefully examined, protected brush, forceps biopsy and washings were sent for cytological, histopathological, bacteriological and mycobacteriological study.

## Observations and Results

**Table no I** show clinical characteristics of patients.

| Characteristics | | Age in Yrs | No. of Patients |
|---|---|---|---|
| **Age and Sex** | Mean Age for Group | 43.02 Yrs | 43 |
| | Mean Age for Male | 43.63 Yrs | 33 |
| | Mean Age for Female | 41.03 Yrs | 10 |
| **Duration Hemoptysis** | 1 Week | | 20 |
| | More than 1 Week | | 23 |
| **Smokers** | Male | | 18 (33) |
| | Female | | 3 (10) |

Table no1 shows the total 43 patients undergone fiberoptic bronchoscopy. 33 were male and 10 female patients. The mean age for male was 43.63 and 41.03 for female patients. The duration was less than one week in 20 patients and more than one week in 23 patients suffer from hemoptysis. Among 18 males and 3 female patients were smokers.

**Table No II** shows the findings of Bronchoscopic examination

| Findings | Male | Female | Total |
|---|---|---|---|
| Normal | 19 | 07 | 26 |
| Detected bleeding Clot | 09 | 02 | 11 |
| Growth | 02 | 01 | 03 |
| Chronic Bronchitis | 03 | 00 | 03 |

Table no II shows that the normal findings in 26 patients (19 males and 07 females), detectable bleeding or clots observed in 11 patients (09Male, 02 females), growth seen in 02 male and 01 female patients and chronic bronchitis found only in 3 male patients.

**Table III** Final Diagnosis of Patients

| Disease | | Smear | Culture | No of Patients |
|---|---|---|---|---|
| **Tuberculosis** | Male | 04 | 02 | 6 |
| | Female | 00 | 01 | 1 |
| **Squamous cell Carcinoma** | Male | 01 | 01 | 2 |
| | Female | 00 | 01 | 1 |
| **Microfilaria Lung** | Male | 01 | 00 | 1 |
| | Female | 00 | 00 | 0 |

Table no III shows tuberculosis found in 7 patients (6 Male and 1 Female), Squamous cell Carcinoma observed in 3 patients (2 Male and 1Female) and microfilaria lung seen only in 1 patient.

## Discussion

Hemoptysis is a common symptom of patients who visit lung specialists. Pulmonologists and other clinicians must then decide how extensively they should seek a cause for this symptom. Many of these patients have no radiographic evidence of a significant thoracic disease process, yet much of the literature suggests that all patients with hemoptysis should undergo Bronchoscopic evaluation.

The main objective of FOB in patients with hemoptysis was the detection of bronchogenic malignancy, since early surgical intervention is the only effective therapy. Zavela et. al, Suri et. al. and Santiago SM et.al[13-15] have found a significant incidence of tumor in 5% patients with hemoptysis and non localizing chest X-rays.

Bronchogenic carcinoma has been reported in 4-22% of patients with hemoptysisand normal non localizing chest radiograph. Poe et. al perfound bronchoscope in 196 patients and found that 5% with malignancy[16] similar findings observed by Nest et.al.[4].

In present study we found malignancy in 6.97 % patients which are comparable with Santiago SM [15]. Many physicians disagree with this viewpoint, feeling that if hemoptysis occurs, a cause for it should be found.[17] Further, some author shave emphasized that carcinoma may be heralded by hemoptysis even if no radiographic abnormalities are present.[18] Although this undoubtedly occurs, our experience suggests that it is an uncommon sign of bronchogenic carcinoma; more commonly, hemoptysis occurs later in the course of the disease, at which point it can be related to sloughing attendant to advanced tumor growth. Our experience with a group of patients who are very predisposed to the development of bronchogenic carcinoma has shown that bronchoscopy adds nothing either diagnostically or therapeutically to management of the disease.

Gong and Salvatierra[19] performed FOB on 129 consecutive patients with hemoptysis, and of the 31 patients found to have bronchogenic carcinoma, 100 percent were over the age of 40, 90 percent had a definitely abnormal chest roentgenogram, 80 percent had hemoptysis greater than one week in duration, and 45 percent had a smoking history of at least 40 pack-years. These findings were all statistically significant. However, patients with normal and questionable abnormal chest roentgenograms were grouped together, in contrast to the study of Weaver et al [20] and to our own study design.

Indications for bronchoscopy in patients with hemoptysis, other than to exclude neoplasm, should include localization of heavy bleeding or removal of clots which may cause obstruction. However, excluding patients with neoplasm, 90 percent of those with a normal chest roentgenogram do not have a bleeding site identified by FOB.

The interesting aspect of our study is an elderly female passive smoker was suffering from squamous cell carcinoma. Furthermore microfilaria was detected in bronchial washing of an young male patients, whose peripheral blood smear study was normal. All tuberculosis cases were above 40 years of age. On follow up one patient developed tubercular pleural effusion right-side. Hence on the basis of our result and findings we concluded that the FOB as a diagnostic aid for cryptogenic hemoptysis is useful.

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