

# ASSESSMENT OF THE RESULTS OF FIBER-OPTIC BRONCHOSCOPY

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**Abstract** -- 3000 patients, having undergone fiber - optic bronchoscopy (FOB) over 10 years, in our Hospital were evaluated. The aim of this study was to determine the prevalence of lung cancer in Iran and their correlation with smoking and to study the clinical and radiological signs in different cancers and the role of fiber-optic bronchoscopy in their diagnosis and the hazards of this method. The correlation between smoking and the signs and symptoms was quite significant ( $p < 0.05$ ) and the clinical and radiological signs were more prominent in those such as miners, directly exposed to environmental pollutants. Cough was the most common symptom in our study. The right lung involvement was slightly more than that of the left lung and the most common radiological finding was mass lesions (38.4% in men and 19.4% in women). Reticulonodular pattern was present in 3.8% of men and 6.2% of women. All the patients underwent the procedure almost without premedication and no complication was seen in this aspect. The complications in our patients were low and mainly included hemorrhage, respiratory distress, and rarely ischemia and cardiac arrhythmia. The most common neoplasm was squamous cell carcinoma, adenocarcinoma, small cell carcinoma and large cell carcinoma.  
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**Key words:** Fiber-optic bronchoscopy

## INTRODUCTION

Lung cancer is more common than other malignancies and its mortality rate in England and Wales is 35000 annually. It is more common in men than in women. Most patients are above 50 years of age and the disease rarely occurs in those under 40 years. Bronchoscopy is approved as the best means to diagnose the endobronchial tumors (1), but other techniques such as CT-scanning may also be helpful. Other studies indicate that this technique can also aid in the diagnosis of tuberculosis in those having led to bronchial ulcerations, mass lesions, and fibrostenosis (2). However in order to maximise the diagnostic accuracy it is wise for the biopsy to be accompanied by cytology and brushing (3). Also intensive care unit (ICU) can be employed (4). However in some cases biopsy method leads to diagnostic pitfalls in the differentiation of various cancers because of small size of the specimen (usu. 2mm) and so other techniques (e.g. surgery) should be called upon in such instances (5). It can especially be used in immuno-compromised patients having opportunistic infections such as pneumocystic carinii and tuberculosis,

to perform trans-bronchial biopsies and endo-bronchial lavage (6). FOB with broncho alveolar lavage (BAL) even via the transnasal route, may be performed with relative safety despite the presence of significant thrombocytopenia (7).

## MATERIALS AND METHODS

A special file was allocated to individual patients being referred to bronchoscopy ward. Their clinical, radiological signs and symptoms were recorded and the biopsy results were collected. Firstly, the patients pharynx and larynx were anesthetized with lidocaine spray and during bronchoscopy, lidocaine solution used to anesthetize the lumen of the bronchi. Nearly all the patients were bronchoscoped without premedication with an olympus bronchoscope. The results categorized and computerised.

SPSS, software used to analyse the data statistically the correctness of the data was checked by another internist to avoid the possible errors in the feeding process.

## RESULTS

The prevalence of various cancers in our study has been shown in Table 1.

**Table 1.** Prevalence of different cancers in our center

Cancer type	prevalence %	Male %	Female %
Squamous cell carcinoma	46.2	50.9	25.8
Adenocarcinoma	34.7	29.2	57.4
Small cell carcinoma	14.8	16.3	9.5
Large cell carcinoma	4.3	3.6	7.3

Squamous cell carcinoma is the most prevalent lung cancer and is about two times more common in men than women. However, the reverse is true for adenocarcinoma. The distribution of lung cancers in different age groups has been shown in Table 2.

**Table 2.** Distribution of lung cancers in different age groups

Age	Male	Female	Total
11-20	1	2	3
21-30	9	9	18
31-40	16	10	26
41-50	41	20	61
51-60	149	26	175
61-70	146	22	168
71-80	31	6	37
81-90	4	1	5
Total	397	96	493

Clinical symptoms of the disease were significantly associated with cigarette smoking (Table 3).

**Table 3.** Symptoms of lung cancer associated with cigarette smoking

Symptoms	Cough(%)	dyspnea(%)	hemoptysis(%)	excess sputum(%)
Non-smoker	57.1	17.2	29.1	31.3
Smoker	85.9	23.9	58.7	60.2

Of the total 3000 patients having undergone bronchoscopy, 17.5 percent were smoker. The percentage was 35.5% among those with bronchogenic carcinoma. The percentage of cigarette addiction in different cancerous patients were as follow:

Large cell	50
Small cell	48.3
Squamous cell	44.2
Adenocarcinoma	21

These figures show less correlation between adenocarcinoma and cigarette smoking. Among all the registered symptoms, four were analysed, and cough was the more common complaint of the above mentioned patients. The prevalence of these symptoms in different cancers is shown in Table 4.

**Table 4.** Prevalence of symptoms in different lung cancers

Type of cancer	Number	Cough (%)	dyspnea (%)	Hemoptysis (%)	Excess sputum (%)
Total	3000	58	14.3	30.9	32.2
No. of cancer cases	493	74.9	17.4	41.7	44.1
SCC	228	79.2	15.5	45.9	55.3
Adenocarcinoma	171	71.4	18.5	37.5	46.4
Oat-cell Cancer	73	73.2	17.8	35.6	43.6
Large cell Cancer	21	66.7	30	50	50

Mass lesions were the most common radiological finding in these patients and hilar enlargement and reticular-nodular view were in next ranks.

The most important complications were bleeding (10 cases), respiratory distress: (6 cases), cardiac ischemia and arrhythmia (1 case). Only 1 patient died because of respiratory failure.

## DISCUSSION

Fiber-optic bronchoscopy has long been used for the diagnosis of lung tumors and the advent of small-sized and more flexible bronchoscopes has reduced the complications and increased the accuracy. Sometimes, tumor markers such as hematoporphyrin derivative or porphyrin II may be used first to localize the tumor and bronchoscopic biopsy can be performed afterwards (8). Besides, in patients have undergone lung resection as a cancer treatment, fiber-optic bronchoscopy can be employed as a post-operative procedure to take therapeutic measures in case of any new neoplastic lesion (9). Patients are given premedications such as sedatives and atropine in most centers which may cause trouble especially in those with reduced lung capacities. In our study, however, except for a few patients in whom bronchoscopy was used to remove a foreign body, almost none of the patients received premedication and no complications were seen. There are other studies which support this idea that outpatient FOB without sedation is safe (10). Our study showed that the prevalence of different lung cancers in Iran is comparable to that of other countries (Table 5).

**Table 5.** Prevalence of different cancers in our Hospital compared with that of other centers.

Cancer type	other countries (%)	Iran (%)
Squamous cell carcinoma	50	46.2
Adenocarcinoma	20	34.7
Small cell carcinoma	20	14.8
Large cell carcinoma	10	4.3

In this series of patients, squamous cell carcinoma lung cancer was more common than other types in contrast to some references in which adenocarcinoma has been mentioned most common. The fact that adenocarcinoma, in many cases, occurs in the periphery of the lung and other biopsy methods such as CT - guided trans-cutaneous biopsy can give more positive results in favour of adenocarcinoma. Bronchoscopy shows the central tumors successfully but fails to diagnose the peripheral tumors.

Lung cancers can produce different radiological patterns. In our study, however, mass lesions were the most common pattern which shows the long time spent before patients referring to physician. The increased number of patients in fall and winter may be due to increased other complications such as respiratory infections, giving rise to discovery of the cancer. The role of smoking is quite significant in predisposing to cancer and male smokers are at a higher risk. The low number of complications shows the safety of this method. Bronchoscopy may be more useful in future.

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