

FREQUENCY OF LUNG CANCER DIAGNOSED BRONCHOSCOPICALLY IN A TERTIARY CARE CHEST FACILITY

Mir Azam Khan¹, Muhammad Atta-ur-Rahman Adnan², Afaq Khattak³, Fahad Ahmad⁴, Hassan Sajjad⁵, Mohsin Khan Jadoon⁶, Arshad Javaid⁷

ABSTRACT

Objective: To evaluate various types of lung malignancies diagnosed through bronchoscopy, and their presentations.

Methodology: This descriptive study was based in a tertiary care chest facility in Peshawar. Duration of the study was from June 2005 - June 2009. The material was obtained from the bronchoscopy record in the chest clinic. All the patients bronchoscoped from June 2005 – June 2009 were studied for their outcome.

Result: This study included 425 patients, 306 (72%) were males and 235 (55.3%) of patients were between 31-60 years age. Ninety two (21.6%) patients were diagnosed with lung cancer; of which 73 (79.5%) patients were males and 19 (20.5%) were females. Sixty five (70.7%) of the 92 patients initially presented with shadow on the Chest radiograph, 9 (9.80%) patients had superior vena caval obstruction, 8 (8.70%) patients presented with lung collapse, 6 (6.52%) with haemoptysis, and 4 (4.35%) patients with hoarseness of voice. Forty three (46.7%) patients were diagnosed with squamous cell carcinoma, 29 (31.5%) with adenocarcinoma, 17 (18.5%) with small cell type carcinoma and 3 (3.30%) patients had large cell type carcinoma. Fifty four (58.7%) patients of the 92 were smokers or had a history of smoking, Anthracosis was found in 45 (10.6%) patients out of all the 425 patients.

Conclusion: Commonest type of lung cancer in this study was squamous cell (46.7%) followed by adenocarcinoma (31.5%) and small cell carcinoma (18.5%). Squamous cell carcinoma was strongly associated with cigarette smoking as compared to adenocarcinoma in this study.

Key words: Bronchogenic carcinoma, Bronchoscopy, Lung cancer.

This article may be cited as: Khan MA, Adnan MAR, Khattak A, Ahmad F, Sajjad H, Jadoon MK, et al. Frequency of Lung Cancer diagnosed bronchoscopically in a tertiary care chest facility. J Postgrad Med Inst 2011; 25(4): 338-42.

INTRODUCTION

Bronchogenic carcinoma, kills 3 million

¹⁻⁶ Medical Student, Peshawar Medical College Peshawar - Pakistan

⁷ Department Of Pulmonology, Lady Reading Hospital Peshawar - Pakistan

Address for Correspondence:

Dr. Arshad Javaid

Professor,

Department Of Pulmonology,
Lady Reading Hospital Peshawar - Pakistan

E-mail: arshadj34@gmail.com

Date Received: March 29, 2011

Date Revised: July 29, 2011

Date Accepted: August 18, 2011

people each year worldwide and continues to be the leader in cancer deaths in the USA and smoking is responsible as a causative factor in most of the cases¹. Bronchogenic carcinoma is also the commonest cause of cancer death in men and women in the UK². Nearly 38 000 new cases are diagnosed per annum in UK. Male to female ratio is at present 2 to 1, but the ratio is changing because of increasing smoking trend in women in the west. Ninety percent of lung cancers are smoking-related. Stopping decreases the risk, but the risk remains higher than in non-smokers. Risk of lung cancer may be increased by asbestos exposure, arsenic and heavy metal exposure, and coexistent usual interstitial pneumonitis (UIP)³.

Lung cancer is divided mainly into two groups, which influence management and treatment decisions⁴. Non-small cell lung cancer (NSCLC) accounts for 75-80% of all lung cancers. Squamous cell carcinoma is the commonest histological type. It usually presents as a mass on CXR. Patients with hypercalcaemia are most likely

to have squamous cell carcinoma. Adenocarcinoma is another type which may not necessarily be smoking-related. It can occur in scar tissue or sites of fibrosis. Alveolar cell carcinoma is rare form. Small cell lung cancer (SCLC) accounts for 20-25% of all lung cancer. It is chemo- and radiosensitive. Surgery usually not appropriate. Untreated extensive small cell lung cancer is rapidly progressive and has a median survival of 6 weeks.

Since its introduction, in 1964 by Ikeda, the flexible fiber optic bronchoscopy has substantially advanced in diagnostic and therapeutic possibilities in pulmonary medicine and has replaced the rigid or open tube bronchoscope in many situations⁵. It is a minimally invasive procedure with high diagnostic yield⁶ and histopathological examination of the tissue is the only mean for definitive diagnosis of bronchogenic carcinoma, which can be obtained easily in endobronchial lesions⁷. In one study transbronchial biopsy was able to diagnose even 60% of the peripheral lung lesion⁸.

Patient preparation for elective bronchoscopy includes fasting prior to procedure, informed consent, careful sedation in some cases, and topical anesthesia⁹. Flexible bronchoscopy is safe in the hands of an experienced operator but certain complications do occur and rare fatalities have been recorded with major complication rate between 0.03-0.08% and mortality rate between 0.01-0.04 percent. Complications include hypoxemia, cardiac arrhythmias, cardiac ischemia, bronchospasm, pneumothorax, hemorrhage and fever et¹⁰. Pneumothorax is very uncommon after bronchoscopy however a major pneumothorax requiring drainage occurred in 3.5% of those from whom transbronchial biopsy specimens were taken. The hemodynamically unstable patients are more prone to complications¹¹.

Some of the indications of fiber optic bronchoscopy are haemoptysis, persistent cough, persistent opacities on chest radiographs, recurrent or persistent pneumonias. It is also indicated in those patients who have strong clinical and

radiological suspicion of tuberculosis but are sputum AFB negative¹². The contraindications include totally uncooperative, hemodynamically unstable patients and patients with severe acute illness. This study was conducted to find out the frequency and presentation of bronchogenic carcinoma in patients who had bronchoscopy in a tertiary care clinic in Peshawar from year 2005 to 2009.

METHODOLOGY

The design adopted for this study was descriptive. Patient's records, who had undergone the procedure of bronchoscopy from June 2005 – June 2009 in the tertiary care chest facility, in Peshawar, KPK, were collected. Information about all the patients registered was collected and analyzed. They included age, gender, address, indication for bronchoscopy, smoking status, cytology and biopsy results. All procedures were performed by a single operator after informed consent. BF 10 Olympus bronchoscope with external diameter of 5mm, was used for all the procedures. Lignocaine 2% was used as local anaesthetic and all patients were monitored during the procedure for Oxygen saturation and pulse rate. No patient received any sedation. All specimens were sent to a single tertiary care laboratory for cytology & histopathology. Chest radiographs were performed on all the patients. CT Thorax was not considered essential investigation to be performed prior to bronchoscopy.

RESULTS

This study included 425 patients out of which 306 (72%) were males and 119 (28%) were females. Forty six (10.8%) patients were below 30 years of age, 235 (55.3%) patients were between 31-60 years of age and 144 (33.9%) patients were above the age of 61 years.

Ninety two (21.6%) patients out of the total 425 were diagnosed histologically with lung cancer, of which 73 (79.5%) patients were males and 19 (20.5%) were females. Mean age of patients with lung cancer was 58.405+14.854 SD.

Table 1: Presentation of Patients Dignosed as Lung Cancer

Indications	Male	Female	Total / Percentage
Shadow on chest x-ray	52	13	65 (70.7%)
Superior vena caval obstruction	5	4	9 (9.80%)
Lung collapse	7	1	8 (8.70%)
Heamoptysis	5	1	6 (6.52%)
Hoarseness of voice	4	0	4 (4.35%)

Sixty five (70.7%) of the 92 lung cancer patients presented with shadowing on the lung, 9 (9.80%) patients had superior vena caval obstruction, 8 (8.70%) presented with lung collapse, 6 (6.52%) with haemoptysis and in 4 (4.35%) patients presentation was with hoarseness of voice (Table 1).

Histologically 43 (46.7%) patients out of total 92 were diagnosed with squamous cell carcinoma, 29 (31.5%) patients suffered from adenocarcinoma, 17 (18.5%) were diagnosed with small cell type carcinoma and 3 (3.30%) patients had large cell type carcinoma.(Table 2). Squamous cell carcinoma was more common among smokers as compared to non smokers 34 vs 9 respectively

whereas for adeno carcinoma the numbers were 11 for smokers vs 18 for non smokers (Table 3).

Out of the 92 histologically diagnosed lung cancer patients, bronchial wash cytology results showed no malignant cells in 52 (56.5%) patients while 40 (43.5%) patients had malignant cells in their bronchial wash on cytology.

Fifty four (58.7%) patients were smokers or had a history of smoking, while 38 (41.3%) patients were non smokers.

Of all the 425 patients, anthracosis was found in 45 (10.6%) patients. The ratio of anthracosis in various age groups and gender is found in the Figure 1.

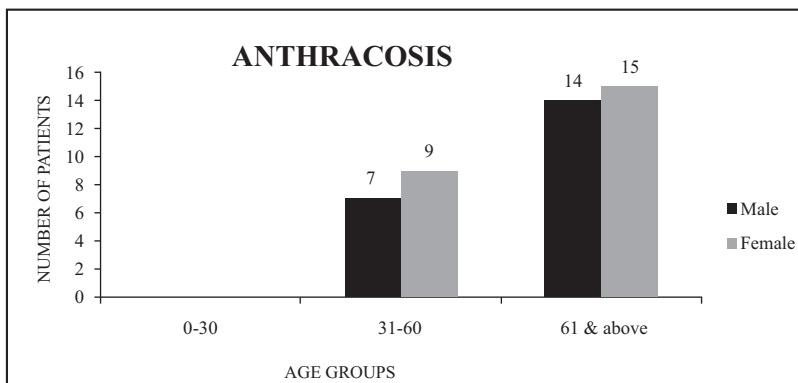
Table 2: Types of Lung Cancer Diagnosed

Histological type	Male	Female	Total / Percentage
Squamous cell carcinoma	40	3	43 (46.7%)
Adenocarcinoma	19	10	29 (31.5%)
Small cell carcinoma	13	4	17 (18.5%)
Large cell carcinoma	1	2	3 (3.30%)

Table 3: Comparison of Types of Lung Cancer Among Smokers & Non Smokers

Histological type	Smoker/History of smoking (54)	Non Smokers(38)	Total
Squamous cell carcinoma	34	9	43 (46.7%)
Adenocarcinoma	11	18	29 (31.5%)
Small cell carcinoma	8	9	17 (18.5%)
Large cell carcinoma	1	2	3 (3.30%)

Figure 1: Age & Sex distribution in patients with Anthracosis



DISCUSSION

Since its introduction, in 1964 by Ikeda, the flexible fiberoptic bronchoscope has substantially advanced the diagnostic and therapeutic possibilities in pulmonary medicine and has replaced the rigid or open tube bronchoscope in many situations.

A study from Italy reported that lung cancer was the most important cause of death in all malignant tumors and the incidence and mortality was increasing in women¹³. In another study the incidence in women was 34.8% and the relative survival was better than men¹⁴. In a study conducted in Spain the incidence was 22.4% per 100,000 population and overall 98% men and 44% women were smokers¹⁵. In comparison with this study, a study from India, showed the average age for bronchogenic carcinoma to be 57 years with a male to female ratio of 4.3:1 and 71% were smokers. In the same study squamous cell carcinoma was 46.5%, adenocarcinoma 18.5% and small cell carcinoma 18.2%.¹⁶ In another study squamous cell carcinoma was 33% and adenocarcinoma 30% and smoking was present in 56% and 38% of men and women respectively¹⁷. In Scotland the rate of Bronchogenic carcinoma and smoking was found to be among the highest in the world¹⁸.

In this study only 40 (43.5%) patients out of 92 confirmed histologically as lung cancer, had bronchial wash cytology positive for malignancy. This reflects poor expertise in our setup as far as cytology services are concerned.

Radiological abnormality was by far the commonest indication for fiberoptic bronchoscopies in this study and in a study from Peshawar¹⁹.

Anthraxis as described above mainly occurs due to long term exposure to smoke. Of all the 425 patients, anthraxis was found in 45 (10.6%) patients. It is the accumulation of black pigment in lung tissue or in other organs. This pigment is mainly composed of carbonaceous material and may originate from cigarette smoke (or other smoked drugs, such as crack cocaine), atmospheric pollution, residential exposure to wood (or biomass) smoke or occupational exposure to carbon-containing dusts, such as diesel exhaust, soot, fly ash, carbon black, graphite and coal. Thus a more or less marked degree of anthraxis may be found in nonsmoking urban residents from heavily polluted areas or in inhabitants (often females) of poor countries with a cold climate (so-called 'hut lung'). It was found more commonly in older people (29 cases in patients above 60 vs 16 below 60 years of age) and in women (24 women

vs 21 men). This results shows that women are more exposed to the biomass fuel domestic smoke in our province.

In this study 54 (58.7%) patients of lung cancer were smokers and 38 (41.3%) none smokers. The reason for this high number of lung cancer in non smokers may be due to the exposure to biomass fuel gases, which is very prevalent in this part of the world. This study like others has confirmed the association of smoking with lung cancer.

Government of Pakistan, Health departments and concerned professionals need to work hard to target smoking prevention and cessation as a means of achieving greater success in fight against tobacco related morbidity²⁰.

CONCLUSION

Commonest type of lung cancer in this study was squamous cell (46.7%) followed by adenocarcinoma (31.5%) and small cell carcinoma (18.5%). Squamous cell carcinoma was strongly associated with cigarette smoking as compared to adenocarcinoma in this study. The distribution of different types of lung cancer in this study is in line with other published international studies. Further studies with larger sample size are required to confirm the diagnosis.

REFERENCES

1. William MD, Sandler AB. The epidemiology of lung cancer. *Cancer Treat Res* 2001;105:31-52.
2. Jemal A, Murray T, Ward E. Cancer statistics. *Cancer J Clin* 2005;55:10-30.
3. Alberg AJ, Samet JM. Epidemiology of lung cancer. *Chest* 2003;123:21-49.
4. Mountain CF. Revisions in the international system for staging lung cancer. *Chest* 1997;111:1710-7.
5. Taylor DA, Bis RD. Bronchoscopic lavage, needle and other biopsies. *Med Int* 1999;99:26-9.
6. Nisar A, Saleem S. Usefulness of fiberoptic Bronchoscopy in hospital practice. *Pak J Chest Med* 2006;12:17-20.
7. Aggarwal AN, Gupta D, Sood B, Behera D, Jindal SK. Development of a computer software for easy storage and analysis of fiberoptic bronchoscopy data. *Indian J Chest Dis And Allied Sci* 2004;46:263.
8. Szulubowski A, Soja J, Kudzal J, Zieliński M, Śladek K. Transbronchial lung biopsy as a diagnostic method of peripheral lesions.

- Pneumonol Alergol Pol 2004;72:482-6.
9. Greig JH, Cooper SM, Kasumbazi HJN. Sedation for fiberoptic bronchoscope. *Resp Med* 1995;89:53-6.
 10. Pachter R, Pue CA. Complicaions of fiberoptic bronchoscope at a University Hospital. *Chest* 1995;107:430-2.
 11. Kozak E, Brath L. Do screening coagulation tests predict bleeding in patients undergoing fiberoptic bronchoscope with biopsy. *Chest* 1994;106:703-5.
 12. Honeybourne D, Neumann CS. An audit of bronchoscopy practice in UK: a survey of adherence to the national guidelines. *Thorax* 1997;52:709-13.
 13. Pirina P, Ostera S, Santoru L, Ginesu GC, Fois AG, Deiola G, et al. Epidemiology of lung cancer in Sardinia, Italy from 1980 to 1996. *Int J Tuberc Lung Dis* 2005;9:622-6.
 14. Fu JB, Kau TY, Severson RK, Kalenkenam GP. Lung cancer in women: analysis of the national sureveillance, epidemiology, and end results data base. *Chest* 2005;127:768-77.
 15. Alonso-Fernandez MA, Garcia-Clamete M, Escoudero-Beuno C, Grupo Asturpar. Characteristics of lung cancer in a region in northern Spain. *Arch Broncopneumol* 2005;41:478-83.
 16. Prasad, James P, Keserwani V, Gupta R, Pant MC, Chaturvedi A, et al. Clinicopathological study of bronchogenic carcinoma. *Respirology* 2004;9:557-60.
 17. Santos-Matinez MJ, Curull V, Blanco ML, Macia F, Mojal S, Vila J, et al. Lung cancer at a university hospital: epidemiology and histological characteristics of a recent and historical series. *Arch Bronconeumol* 2005;41:307-12.
 18. Ninane V. Bronchoscopic early detection of lung cancer. *Rev Mal Respir* 2005;22:38-42.
 19. Suleman A, Ikramullah Q, Ahmed F, Khan MY. Indications and complications of Bronchoscopy: an experience of 100 patients in a tertiary care hospital. *J Postgrad Med Inst* 2008;22:210-4.
 20. Mahmud T, Saboor QA, Aasim M, Bokhari SNH. Status of family physician's awareness about tobacco smoking hazards and cessation. *Pak J Chest Med* 2010;16:10-7.

CONTRIBUTORS

MAK, MARA, AK, FA, HS and MKJ collected and analyzed data and wrote the paper. AJ conceived the idea, performed all the procedures, checked the initial draft before submission and revised the final manuscript.

GRANT SUPPORT, FINANCIAL DISCLOSURE AND CONFLICT OF INTEREST

None Declared