# Demographic and Pathological Study in a Sample of Bronchogenic Carcinoma Patients in Baghdad Teaching Hospital , During 2006-2008

**Hamza Abdullah Al Sabah*, Mustafa Ahmed Kattaa **, Abdulla Janger Alfarttoosi*****


## ABSTRACT:

**BACKGROUND:**

The incidence of Lung cancer is increasing rapidly throughout developing countries. Lung cancer is the most commonly occurring cancer in men and the fifth in women.

**OBJECTIVE:**

To study the demographical and pathological profile of lung cancer among sample of Iraqi patients.

**PATIENTS AND METHODS:**

A retrospective descriptive study depending on review of records of diagnosed patients during 2006 - 2008.This study was conducted at the Baghdad teaching hospital, Baghdad-Iraq, during a period from 1st March 2012 to 1st January 2013.A total of 284 patients' records all with proven lung cancer were selected retrospectively, reviewed and checked.

**RESULTS:**

There were 284 patients recruited in this study, the overall mean age was (62.1 ± 12.8) years and range was (18 – 100) years. Smokers were 232 (81.7%), Non-smokers were 32 (11.3 %) and Ex-smokers were 20 (7%). All cases had cough, almost (93%) chest pain, (88.4%) presented with shortness of breath..

Regarding the types of carcinoma, squamous cell carcinoma was present in 112 patients (39.4%), adenocarcinoma in 96 patients (33.8%), small cell carcinoma in 41 patients (14.5%), while large cell carcinoma in 31 patients (10.9%), and undifferentiated carcinoma was present in 4 patients (1.5%).

Regarding treatment for lung cancer among study groups, it had been noticed that 166 patients (58.5%) were subjected to chemotherapy, 115 patients (40.4%) were subjected to radiotherapy and only 3 patients (1.1%) were treated surgically.

**CONCLUSION:**

Lung cancer is more common among males and more frequent among those aged 50 years or more. The study demostrate that Sequamous cell carcinoma is the most common type of primary lung cancer in Iraqi patients (39.4%), adenocarcinoma is the second common type (33.8%). The five year survival was very low, only (0.4%) survive for five years after diagnosis, the majority of cases died within two years.


**KEYWORDS:** demographic ,pathological , bronchogenic carcinoma , Iraq

## INTRODUCTION:

Lung cancer is the most frequently diagnosed major cancer and is the leading cause for the most cancer deaths in both men and women throughout the world [1] It considered a disease of modern man with higher morbidity and mortality rates [2] , while it was quite rare at the beginning of 20th century.Lung cancer worldwide contributing nearly 13% of the total number of new cases of cancer diagnosed in 2008. [3]

It accounts for 1.35 million new cases and the1.18 million cancer-related deaths exceeding the number of deaths from four other major cancers combined (breast, colon, pancreatic and prostate).[4]

Lung cancer, like most other solid tumour s, is unfortunately usually recognized late in its natural history. Only about 5.5% of lung cancers are currently cured. The median survival for all patients is approximately six months, one year

*Baghdad teaching hospital
**Baghdad Teaching Hospital
***College of medicine,Baghdad University

survival is at best 25-30% and no more than 7-8% of patients are alive at 5 years. [5]Increased survival rate and poor awareness about the harmful effects of smoking of various types lead to increased number of patients with lung cancer. Iraq is no longer away from this race; lung cancer is the most commonly occurring cancer in men (16.7%) and the fifth in women (4.2%) [6].

Iraq has witnessed an epidemiological transition with increasing prevalence of chronic non-communicable diseases (NCDs) with their contributory risk factors. [7] The situation in Iraq has been especially complicated further by the harsh condition to which the country was exposed for the last three decades. Wars, economic sanctions and the violence has struck all infrastructure in the country and lead to deterioration in the health indicators of the population. The burden of lung cancer is unlikely to diminish significantly, at least in the short term and Iraq now a day facing significant challenges of doubled burden on both population health and health system. However, lung cancer no longer remains a problem of the developed world alone. It's incidence is increasing rapidly throughout developing countries.[8]

## AIM OF THE STUDY:

To study the demographical and pathological profile of lung cancer among sample of Iraqi patients.

## PATIENTS AND METHODS:

A retrospective descriptive study depending on review of records of diagnosed patients during 2006 - 2008.This study was conducted at the Baghdad teaching hospital, Baghdad-Iraq, during a period from 1st March 2012 to 1st January 2013.A total of 284 patients' records all with proven lung cancer were selected retrospectively, reviewed and checked.

All cases proved by Pathological diagnosis of lung cancer with Complete clinical, pathological, staging and treatment details on file.Data were collected using a pre-constructed data collection form which gathered the data of the patients, it contains the following details : age, sex, job, residence, level of education, type of housing, exposure to pollutants (duration), marital status, Smoking habit (duration, amount and type), drinking habits, family history of chronic diseases (hypertension, diabetes, tuberculosis, bronchogenic carcinoma, or other diseases).

The following Clinical data were recorded: chief complaint of the patient (symptoms), duration of symptoms (categorized into three groups $< 6$ months, 6 months to less than 1 year and $\geq 1$ year and finding of clinical examination. Data about investigations including laboratory and clinical tests and examination: Haematological lab investigation (Hb and ESR), Radiological tests (MRI, CT scanning), Bronchoscopic examination and histological findings, this included type of cells and type of CA.The last domain included treatment data, such as chemotherapy, radiotherapy and surgery.SPS software for windows was used in statistical analysis.

## RESULTS:

There were 284 patients recruited in this study, 213 (75%) males with a mean age of (62.6 ± 11.6) years and 71 (25%) females with a mean age of (60.5 ± 12.3) years, the overall mean age and range were (62.1 ± 12.8) years and (18 – 100) years respectively. No significant differences had been found within age in between both genders (P>0.5), table 1. From another point of view age was strongly associated with the incidence of lung cancer, as it is shown in figure 1, the majority of cases (88%) aged 50 years or more, and more common among those aged (60 - 69) years, P=0.0013, Figure1.

The other socio-demographic characteristics of patients are summarized in table2.

**Table 1:Distribution of study population by age and gender (N=284).**

| Variable | | Male | Female | Total | P. value |
|---|---|---|---|---|---|
| Number | | 213(75%) | 71(25%) | 284(100%) | 0.0001 |
| Age (years) | Mean | 62.6 ± 11.6 | 60.5 ± 12.3 | 62.1 ± 12.8 | 0.21 *NS* |
| | Range | 18 – 100 | 35 - 90 | 18 - 100 | |
| Age groups | < 40 | 6 | 5 | 11 | 0.13 *NS* |
| | | 54.5% | 45.5% | 100.0% | |
| | 40-49 | 16 | 7 | 23 | |
| | | 69.6% | 30.4% | 100.0% | |
| | 50-59 | 49 | 20 | 69 | |
| | | 71.0% | 29.0% | 100.0% | |
| | 60-69 | 84 | 22 | 106 | |
| | | 79.2% | 20.8% | 100.0% | |
| | 70 - 79 | 42 | 11 | 53 | |
| | | 79.2% | 20.8% | 100.0% | |
| | >=80 | 16 | 6 | 22 | |
| | | 72.7% | 27.3% | 100.0% | |
| | Total | 213 | 71 | 284 | |
| | | 75.0% | 25.0% | 100.0% | |

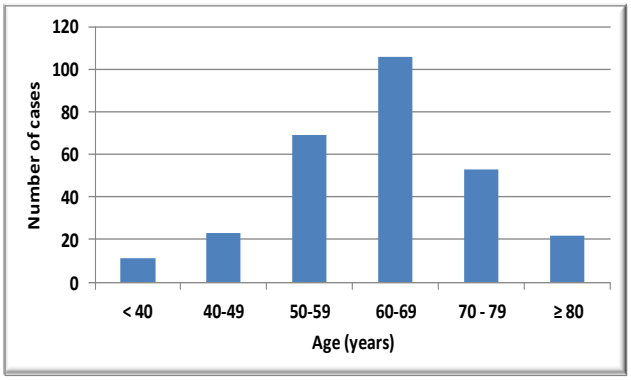


**Figure 1: Distribution of study population by age groups (N=284) P=0.00013,**

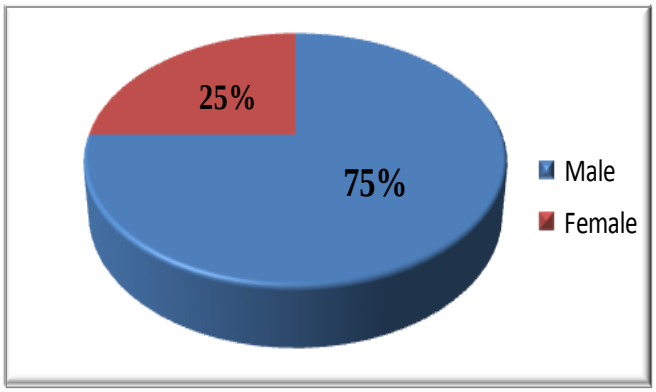


**Figure 2: Distribution of study population by gender (N=284).**

**Table 2: Socio-demographic characteristics of study population.(N=284).**

| Variable | | N | % |
|---|---|---|---|
| Marital status | Single | 4 | 1.4% |
| | Married | 233 | 82.0% |
| | Widowed | 47 | 16.5% |
| Job | Unemployed | 46 | 16.2% |
| | Housewife | 56 | 19.60% |
| | Military | 70 | 24.6% |
| | Farmer | 42 | 14.8% |
| | Retired | 23 | 8.10% |
| | Professional | 14 | 4.90% |
| | Clerical | 12 | 4.20% |
| | Academic | 5 | 1.80% |
| | Worker | 5 | 1.80% |
| | Driver | 4 | 1.40% |
| | Management | 3 | 1.10% |
| | Other | 4 | 1.40% |
| Residence | Urban | 239 | 84.2% |
| | Rural | 45 | 15.8% |
| Education level | Illiterate | 100 | 35.3% |
| | Read And Write | 80 | 28.3% |
| | Preparatory and | 91 | 32.2% |
| | Higher | 12 | 4.2% |
| Housing | Brick | 231 | 81.4% |
| | Block | 49 | 17.3% |
| | Mud | 4 | 1.4% |
| Exposure to pollutant | No | 278 | 97.9% |
| | Yes | 6 | 2.1% |
| Drinking | Drinker | 2 | 0.8% |
| | Non drinker | 282 | 99.2% |

**Smoking habits:**

Among the study populations smokers were 232 (81.7%), Non-smokers were 32 (11.3 %) and Ex-smokers were 20 (7%). Except only one patient who was smoked Nerjella (0.4%) all smokers were smoked cigarettes (99.6%). 250 cases (99.2%), had experienced smoking for more than 10 years in their lives, the remaining 2 cases (0.8%) had experienced smoking for less than 10 years. 248 (98.4%), cases were smoked more than 1 pack \ day and 4 cases (1.6%) were smoked less than 1 pack\day, table 3.

**Chief complaint:**

Distribution of chief complaint is shown in table 5, all cases had complained of cough, almost (93%) chest pain, (88.4%) presented with SOB, (82.4%) presented with fainting attack, (69.4%) loss of weight, (68%) anorexia, (56%) with sputum , (32%) hemoptysis, (27.1%) fever, and only (8.5%) were presented with loss of energy.The Majority of cases had their symptoms for less than 6 months, and only (15%) had symptoms for 1 year or more, with a mean duration of symptoms of (4.15 ± 2.9) months.

**Table 3: Smoking related characteristics of study population distributed by gender.**

| | | Male | | Female | | | |
|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | p |
| Smoking | Non | 12 | 37.5% | 20 | 62.5% | 32 | 0.0032 |
| | Current | 185 | 79.7% | 47 | 20.3% | 232 | |
| | Ex-Smoker | 16 | 80.0% | 4 | 20.0% | 20 | |
| | Total | 213 | 75.0% | 71 | 25.0% | 284 | |
| Tobacco type | Non | 12 | 37.5% | 20 | 62.5% | 32 | |
| | Cigarette | 200 | 79.7% | 51 | 20.3% | 251 | 0.001 |
| | Narjella | 1 | 100.0% | 0 | .0% | 1 | |
| | Total | 213 | 75.0% | 71 | 25.0% | 284 | |
| Amount | <1 pack\day | 1 | 33.3% | 2 | 66.7% | 3 | |
| | > 1 pack\day | 200 | 80.3% | 49 | 19.7% | 249 | 0.0002 |
| | Total | 201 | 79.8% | 51 | 20.2% | 252 | |
| Duration | < 10 years | 1 | 33.3% | 2 | 66.7% | 3 | |
| | > 10 years | 200 | 80.3% | 49 | 19.7% | 249 | 0.0001 |
| | Total | 201 | 79.8% | 51 | 20.2% | 252 | |

**Table 5: Distribution of chief compliant among study population (N=284).**

| Variable | | N | % |
|---|---|---|---|
| Chief complaint | Cough | 284 | 100% |
| | Chest pain | 265 | 93.3% |
| | SOB | 251 | 88.4% |
| | Fainting attack | 234 | 82.4% |
| | Loss of weight | 197 | 69.4% |
| | Anorexia | 193 | 68% |
| | Productive cough | 159 | 56% |
| | Hemoptysis | 91 | 32% |
| | Fever | 77 | 27.1% |
| | Loss of energy | 24 | 8.5% |
| Duration of complaint | < 6months | 237 | 83.5% |
| | > 6months | 32 | 11.3% |
| | ≥1 year | 15 | 5.3% |
| Duration between compliant and diagnosis (mean ± SD) months | | 4.15 ± 2.9 | |

**Physical Finding**:
Table 6, demonstrates the physical findings among study population, unilateral pulmonary findings were the predominant among study population, present in (95.4%) of cases, bilateral pulmonary finding in only 3 cases (1.1%). Extrapulmonary findings, neurological, lymph nodes, and chest deformity were present in (7.7%), (7%), (2.8%) and (1.1%), respectively.

**Investigations :**The mean hemoglobin level of patients was (12.26 ± 1.3) gm\dl with a range of (7 - 16) gm\dl, table 7.

**Radiological finding:**Table 8, summarizes the frequencies and %ages of radiological finding, chest X-ray revealed positive finding in 283 patients (99.6%), of them 272 (95.4%) were unilateral and only 12 (4.2%) with bilateral finding. CT scan and bronchoscopic findings were positive in all patients (100%).

**Table 6: Distribution of physical finding among study population (N=284).**

| Physical finding | | N | % |
|---|---|---|---|
| Pulmonary Finding (crackles , wheeze, decrease air entry, stony dullness, bronchial breathing) | Unilateral | 271 | 95.4 % |
| | Bilateral | 3 | 1.1% |
| Extra Pulmonary | | 22 | 7.7% |
| Neurological | | 20 | 7.0% |
| Lymph node | | 8 | 2.8% |
| Chest deformity | | 3 | 1.1% |

**Table 7: Mean hemoglobin and ESR of patients.**

| est | Range | Mean ± SD |
|---|---|---|
| Hb. gm\dl | 7 - 16 | 12.26 |
| ESR | 25 - 135 | 77.4 ± 22.7 |

**Table 8: Radiological and bronchoscopic findings of patients.**

| Test | Finding | | N | % |
|---|---|---|---|---|
| X ray | present | | 242 | 85% |
| | Abscent | | 41 | 15% |
| | Side | Unilateral | 231 | 95.4% |
| | | Bilateral | 11 | 4.6% |
| CT scan | Positive | | 284 | 100.0% |
| Bronchoscopy | Positive | | 213 | 75% |

**Types of carcinoma**

Regarding the types of carcinoma, squamous cell carcinoma was present in 112 patients (39.4%), Adenocarcinoma in 96 patients (33.8%), Small cell carcinoma in 41 patients (14.5%), while large cell carcinoma in 31 patients (10.9%), and undifferentiated was present in 4 patients (1.5%).

**Table 9: Frequency distribution of types of carcinoma among patients.**

| Variable | Finding | N | % |
|---|---|---|---|
| Type of cancer | Squamous cell carcinoma | 112 | 39.4% |
| | Adenocarcinoma | 96 | 33.8% |
| | Small cell carcinoma | 41 | 14.5% |
| | Large cell carcinoma | 31 | 10.9% |
| | Undifferentiate | 4 | 1.5% |
| | Total | 284 | 100% |

**Treatment:**

Table 10 shows the distribution of treatment for lung cancer among study groups, it had been noticed that 166 patients (58.5%) were subjected to chemotherapy, 115 patients (40.4%) were subjected to radiotherapy and only 3 patients (1.1%) were treated surgically.

**Table 10: Treatment type distribution among study patients.**

| Treatment type | N | % |
|---|---|---|
| Chemotherapy | 166 | 58.5% |
| Radiotherapy | 115 | 40.4% |
| Surgery | 3 | 1.1% |
| Total | 284 | 100% |

**Outcome:**

The outcome distribution among study patients is demonstrated by table 11, and 12.

35 patients (12.3%) were lost in follow up with unknown outcome, while Death occurred in 249 patients (87.7%), at different period of time after diagnosis and treatment, among those died patients, 48 (19.3%) were died after 1 year, 184 (73.9%) died with in second year, 15(6%), patient died within third year, and only 1 patient died within fourth year and another one patient died within fifth year.

**Table 11: Outcome distribution among study patients.**

| Outcome | N | % |
|---|---|---|
| Died | 249 | 87.7% |
| Lost | 35 | 12.3% |

**Table 12: Distribution of patients according to the time of death.**

| Outcome | N | % |
|---|---|---|
| Died within first year | 48 | 19.3% |
| Died within second year | 184 | 73.9% |
| Died within third year | 15 | 6.0% |
| Died within fourth year | 1 | 0.40% |
| Died within fifth year | 1 | 0.4% |
| Total Death | 249 | 100% |

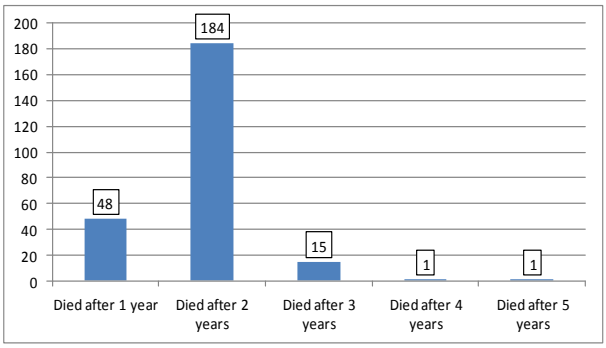


**Figure 3: Distribution of study population by time of death.**

## DISCUSSION:

Lung cancer is one of the most important life threatening conditions responsible for the death of millions of people in our today's world, [1-4] and Iraq is no longer ahead from this race. In the developed countries incidence and death from lung cancer in female are rising. Increased survival rate and poor awareness about the harmful effects of smoking of various types lead to increased number of patients with lung cancer.[2] Compared to western population, epidemiological study shows there are rising prevalence of lung cancer in Iraq population.[6-8]

Of the total 284 patients, 213 (75%) patients were males and 71 (25%) were females and the male to female ratio in this study was 3:1, which is close to findings of studies in Iraq.[6, 9-11] [figure 3].

In developing countries where cigarette use by females is low, there is a greater disparity: Arab males have a higher overall rate of lung cancer (twice to 14 fold that of females). In Bahrain the ratio was 2.8:1, in Kuwait 3.4, in Syria 4.5:1, while in the UAE it was 2:1. [12]

This study goes in line with studies in other countries; in a case control study by Nishii et al (Japan 2001)[13], males were three times the females among cases, but it differs with results of studies in western countries; males have a greater lifetime risk of lung cancer than females (7.81% vs. 5.8%).[35] In India Kashyab et al reported in 2003 a male : female ratio of 6.1:1[14]

This inconsistency with western countries might be attributed to differences in smoking habits in between males and females as the smoking habit is more prevalent in Iraqi males.

Mean age of the patient in the present study was 62.1 years and this is in agreement with the results of studies in Iraq [6,7,8,9,10,11], this might be explained as there is an increase in incidence rate of malignancies with increased age.

Unemployed patients represented 21.1% of the patients, housewives 19.6%, military 19.6%, farmers 14.7% of the patients indicating that the military job was at a risk of developing lung cancer ,this might be explained by exposure to pollutant and smocking habits. and this was also observed by Sai XY et al (China 2007) in a cohort study on a group of retired military men.[15] [table 2].

Most of the patients were living in urban areas (84.2%), many studies and literatures suggested that lung cancer is a disease of modern man[16,17] and this finding is consistent with the distribution in the USA and UK that might be attributed to the effect of environmental pollution. [18]

Smoking habit was highly associated with lung cancer in the present study (p = 0.0032) and this is coinciding the results of studies in Iraq[6] and in USA.[19]

The type of smoking, amount of cigarette smoked and the duration of smoking were highly associated with lung cancer (p value 0.001, 0.0002 and 0.0001, respectively) and this finding is in agreement with results of previous studies in Iraq[10] and in USA. [16]

Almost two thirds of the patients had a family history of HT, 25.8% of them had a family history of DM, 22.3% of them had family history of CHDs and 6.7% of them had a family history of carcinoma and these findings are consistent with previous studies in Iraq [2] and are not consistent with results of study in USA. [20]

The main chief complaints were coughing (100%), chest pain (93.3%),haemoptysis (32%), and SOB (88.4%) and these findings are in agreement with results of previous studies in Iraq. [6]

The majority of physical findings were pulmonary (95.4%) and this finding is consistent with result of study in USA. [21]

X-ray represented the cheapest and simplest sensitive investigation, 85% of the patients diagnosed by x-ray and confirmed with CT scan (100%) and bronchoscopy (75%) and these findings were consistent with American thoracic society regulations. [18]

The majority of the lung tumours types were malignant (97.5%), 39.4% of the malignant cancers were squamous cell carcinoma, 33.8% of the cancer adenocarcinoma and 14.5% of them were small cell carcinoma; these findings are in agreement with results of study in Iraq[6] and is consistent with results in study in USA[20] in which non-small cell represented 80% of lung cancers in USA.

Chemotherapy and radiotherapy represented the main way of treatment of patients with lung cancer in this study (99%) and this finding is not consistent with previous studies in Iraq. [6,10] This might be attributed to the reluctance of the patients from surgical option of treatment caused by the low chance rate of cure and the majority of cases were presented in advanced stages.

The lung cancer is a fatal disease and 87.7% of the patients were recorded dead in this study whereas the remaining had been lost and their outcome was unknown. Almost 74% cases died after two years and only (0.4%) survive for five

years and thus disagreed a previous Iraqi study [2] this might be attributed to the late presentation of cases and more advanced stages, In USA[(17)] similar finding had been reported, this also might be attributed to the wide changes in Iraqis lifestyle in the last two decades particularly after 2003.

## CONCLUSION:

Lung cancer is more common among males with a male to female ratio of 3:1 and it is more frequent among those aged 50 years or more with a peak at the age group 60-69 years.Cough is the most common clinical finding, found in all patients .Cigarette smoking is responsible for more than (80%) of its aetiology. This study shows that Sequamous cell carcinoma is the most common type of primary lung cancer in Iraqi patients (39.4%), adenocarcinoma is the second common type (33.8%). The five year survival was very low, only (0.4%) survive for five years after diagnosis, the majority of cases died within two years.

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