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PATTERNS AND PRESENTATIONS OF LUNG CANCER IN IRAQI PATIENTS

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INTROUCTION

Lung cancer is the malignant transformation of lung tissue. The term "lung cancer" is applied to tumors that develop from tracheal parenchyma, bronchi, bronchioles or lung parenchyma.[1] Lung cancer is the leading cause of cancer mortality for men and women, exceeding the mortality of breast, colon, and prostate cancer combined.[18] The major risk factor for lung cancer is undoubtedly cigarette smoking, which probably accounts for about 90% of cases. There is a clear relationship between risk and the age of smoking onset, the number of years of smoking, and the number of cigarettes smoked per day, smoking cessation at any age reduces the risk of lung cancer, which drops to between 30 to50% of that of continuing smokers after 10 years. With chronic exposure to tobacco smoke, the ciliated epithelium of the respiratory mucosa undergoes squamous metaplasia and eventually a field change can occur with the development of carcinoma *in situ* before the start of frankly invasive cancer.[3]

Approximately 10% of lung cancers are thought to be caused by carcinogens other than cigarette smoking. Among non smokers, 30% of lung cancer deaths are attributed to radon exposure.[18]

Increases in lung cancer risk also accompany exposure to carcinogens such as asbestos, bis(chloromethyl) ether, polycyclic aromatic hydrocarbons, chromium, nickel and inorganic arsenic compounds.[19]

Lung cancer is broadly separated into SCLC and NSCLC types, and NSCLC accounts for approximately 80% to 85% of cases. Less than 50% of patients with NSCLC have resectable disease on initial presentation, and 25% of patients present with locally advanced (regional lymph node involvement without distant metastases) disease. Approximately 30% of patients with SCLC have limited-stage disease on presentation.[6]

The Three Major Subtypes of NSCLC: Adenocarcinoma, Squamous cancer, Large cell cancer.[1] adenocarcinoma (50%), squamous cell carcinoma (35%), and large cell lung cancer (15%). Subtypes of adenocarcinoma include broncho-alveolar, acinar, and papillary; subtypes of large cell lung cancer include giant cell and clear cell carcinomas, both of which carry poor prognosis. Adenocarcinomas are the histologic type least associated with smoking SCLC (*oat cell cancer*) contains dense neurosecretory granules containing neuroendocrine hormones such as adrenocorticotropic hormone (ACTH) and vasopressin.[4]

Lung cancer can spread locally to the mediastinum, pleura (may produce effusion, especially adenocarcinoma) chest wall and ribs, vertebral body or diaphragm. The disease can spread via lymph nodes to the hilar nodes, the mediastinal nodes (pretracheal, paratracheal,para-aortic, subaortic and subcarinal) or the supraclavicular fossa (N3). It can also spread via the blood stream to the liver, adrenal gland, lung, brain,bone or skin.[3]

Although no set of signs or symptoms is pathognomonic for lung cancer, they may be divided into three categories: (a) those due to local tumor growth and intrathoracic spread, (b) those due to distant metastases, and (c) nonspecific systemic symptoms, or paraneoplastic syndromes. Centrally located tumors produce cough, a localized wheeze, hemoptysis, and symptoms and signs of airway obstruction and post obstructive pneumonitis such as dyspnea, fever, and productive cough. Peripheral tumors are more likely to be asymptomatic when they are small and confined within the lung; occasionally, cough and pleuritic chest pain may be evident.[7]

Weight loss, which is usually but not always accompanied by anorexia, occurs in approximately half of the patients, and generalized weakness occurs in one-third. Fever and anemia occur less frequently, in fewer than 20% of patients. Fever is generally not considered paraneoplastic in lung cancer patients; if present, it is usually associated with a documented infection (e.g., postobstructive pneumonia) or with liver metastases. Paraneoplastic syndromes are condition associated with the cancer, which induce signs and symptoms away

from the primary tumor or its metastasis. The major categories of paraneoplastic syndromes include endocrine, neurologic, cutaneous and musculoskeletal, and cardiovascular and hematological manifestations.[7]

As with other medical conditions, the workup begins with a careful history and physical examination Although sputum cytology reveals a diagnosis in only a small percentage of patients, it is a simple and noninvasive evaluation that should be considered for patients with respiratory symptoms and a suspicious lung mass. Traditionally, bronchoscopy has been employed for biopsy of central lesions, whereas transthoracic needle biopsy is often the first consideration for peripheral lesions. Endobronchial ultrasound is increasingly used to obtain tissue from mediastinal lymph nodes or parenchymal lung lesions or both; esophageal ultrasound may be used for biopsy of paraesophageal lymph nodes.[2]

Positron emission tomography combined with computed tomography 18F-fluorodeoxyglucose (18F-FDG-PET/CT) imaging is indicated in most patients with localized NSCLC and SCLC and can replace the traditional workup that included CT imaging of the chest and abdomen plus a bone scan. The addition 18F-FDG-PET imaging has been shown to reduce the number of futile thoracotomies for patients with NSCLC and has a substantial impact on the radiation treatment plan for NSCLC and SCLC, particularly when an approach of involved field RT is used.[8]

Generally, biopsy of a suspected distant metastatic site should be considered in lieu of biopsy of the primary lung lesion because this would confirm both histology and stage. 18F-FDG-PET imaging is typically not warranted in patients presenting with evidence of distant metastases (on other imaging studies) because treatment would not likely be altered according to the PET results. Magnetic resonance imaging (MRI) of the brain should be obtained in patients with localized SCLC and patients with clinical stage III NSCLC, in addition to patients presenting with neurologic symptoms.[2]

1 early-stage clinical node-negative NSCLC because CT and 18F-FDG-PET imaging have a false-negative rate (in the mediastinum) ranging from 10% to greater than 25%.[9]

Combined anatomic and functional imaging is generally sufficient to assess mediastinal lymph node involvement for the subset of patients with peripheral stage I NSCLC.[10]

Whether comprehensive mediastinal lymph node sampling with endobronchial ultrasound can replace mediastinoscopy is an area of active investigation.[2]

In patients with NSCLC, the most important prognostic factor is tumor stage. This factor largely determines treatment. Surgery is the standard mode of treatment of patients with stage I and II tumors and for selective patients with stage III tumors. Neoadjuvant or adjuvant therapy is recommended for many patients with stage II and III disease. Only about 20% of all patients presenting with lung cancer are suitable candidates for curative surgery. The use of combined-modality therapy including radiation and chemotherapy is recommended for locally advanced stage III disease. Patients with stage IV disease are treated with chemotherapy or palliative radiation therapy (RT) or with supportive therapy alone. Patients with histologically documented unresectable or inoperable stage I-III NSCLC are evaluated for definite radiotherapy with or without chemotherapy. If there are pressing symptomatic needs for palliation, such as significant obstruction of a major airway, severe hemoptysis, SVC obstruction, painful bony metastases in the weight-bearing areas, or symptomatic brain metastases, the initial treatment is radiotherapy with or without chemotherapy. If a patient has evidence of disseminated disease and there is no pressing need for radiotherapy, the approach includes consideration of systemic chemotherapy, or supportive therapy alone if the patient's general condition is not suitable for systemic chemotherapy. For limited-stage SCLC, concurrent chemoradiotherapy should be considered. Radiotherapy should be delivered to 45 Gy, given 1.5 Gy per fraction and twice daily, with concurrent cisplatin and etoposide chemotherapy. Patients should be encouraged to participate in research protocols using newer chemotherapy and/or dose escalation/escalation radiotherapy. PCI should be considered for complete clinical responders with a dose of 25 to 36 Gy.[7]

AIM OF THE STUDY

The aim of this study is to estimate the presentation of patients and types of lung cancers.

PATIENTS AND METHODS

A cross sectional study that included thirty patients already diagnosed with lung cancer who attended the hospital of radiation oncology and nuclear medicine in Baghdad and Baghdad Teaching Hospital, from January to July 2013 The patients included (20) males and (10) females, their ages ranged from 50-86 years, with a mean age of 68 years. In this study we evaluated factors including age, gender, cigarette smoking. Also we evaluated history of presenting symptoms as a chief complaint whether the patient presented with hoarseness of

voice or others symptoms including dyspnea, dysphagia, cough, hemoptysis and air way obstruction.

The radiological investigations included, chest X-ray, chest CT scan, and if indicated AbdominaL Ultra sound. (when there was suspicion of Liver metastasis).

All patients had histopathological report and sent for Bronchoscopic Biopsy or sputum cytology or fine needle aspirate or diagnosed by supra clavicular lymph node biopsy. All parameters estimated depended on history taken, physical examination, radiological investigation and histopathological report information.

RESULTS

The median age for the lung cancer in our study was 68 years as 18 (60%) patients were > 50 year old and 12 (40%) were ≤ 50 year old, these results shown in table (1).

Table 1: shows age distribution of the lung cancer carcinoma in the studied group.

Age	No. patient	percentage
≤50	12	40 %
>50	18	60 %

In our study thirty patients with lung cancer were evaluated for important risk factors responsible for the tumour occurrence of them 20 patients were males (66%) and 10 were females (34%), these results shown in table(2).

Table 2: shows the distribution of lung cancer according tothe gender in the studied group.

Gender	No. patient	percentage
Male	20	66 %
Female	10	34 %

In our study also thirty patients with lung cancer were evaluated for major risk factors which is smoking responsible for the occurrence of lung cancer, of them 22 patients were smoker (73.3%) and 8 were non smoker (26.6%), these results shown in table (3).

Table 3: shows the distribution of lung cancer according to smoking habit in the studied group.

Smoking	No. patient	percentage
Smoker	22	73.3%
Non smoker	8	26.6 %

Two important pathological subtypes(NSCLC) and (SCLC) were found depending on the histopathological reports performed on the primary of lung cancer, as shown in table (4).

Table 4: Shows the pathological subtypes of the primary lung cancer in the studied group.

Histology	No. patient	percentage
1- NSCLC		
A- squamous cell ca	14	46 %
B- adenocarcinoma.	12	40 %
SCLC	4	13 %

In our study also thirty patients with lung cancer were evaluated for the main presenting sign and symptom which include –shortness of breath, chest pain, hoarseness of voice, back pain, vertigo, cough and haemoptysis.

Table 5: shows the main sign and symptom of the primary lung cancer in the studied group.

S.O.B.	Chest pain	Hoarsness of voice	Back pain	Vertigo	Cough and Hamoptysis
7/30	5/30	1/30	1/30	1/30	15/30
23%	16.6 %	3.3 %	3.3 %	3.3 %	50 %

In our study also thirty patients with lung cancer which diagnosed with bronchoscopic biopsy, sputum cytology, fine needle aspirate, supraclavicular lymph node biopsy.

Table 6: Shows the main methods for diagnosis of the primary lung cancer in the studied group.

Bronchoscopic Biopsy	Sputum Cytology	F.N.A	supraclavicular lymph node biopsy
20/30	5/30	3/30	2/30
66.6 %	16.6 %	10 %	6.7 %

The modality of treatment received by the patients was divided in our study as the use of radiotherapy or chemotherapy or both modality for the treatment of the primary tumor so we found that 18 patients (60%) were treated with both modality (radiotherapy and chemotherapy) and 4 patient (13.34%) treated with radiotherapy while 8 patient(27%) treated with CHEMOTHEAPY, these results shown in table (8).

Table 7: Shows the modalities of treatment used for the LUNG CANCER patients in the studied group.

CHEMOTHEAPY. and RADIOTHERAPY.	RADIOTHERAPY.	CHEMOTHEAPY.
18/30	4/30	8/30
60 %	13.34 %	27 %

In our study fifteen patient presented with stage four disease, seven person (46.67%) with bone secondary and six person (40%) with liver and two person (13.34) with brain secondary**.**

Table 8: Shows the modalities of metastasis for LUNG CANCER patients in the studied group.

Brain secondary	Bone secondary	Liver secondary
2/15	7/15	6/15
13.34 %	46.67 %	40 %

Stage IV presentation no. patient 15/30.

DISCUSSION

In this study of the main risk factors for the lung cancer, The age of lung cancer patients was which showed that the disease was more common between the ages 50-86 years, These results were consistent with that of age, with the median age at diagnosis being 68 years, and this result is consistent with that of the Beasley MB, Brambilla E, Travis.[11]

The median age of patients who present with lung cancer is 70 years. Among the patients of this study 66% were found to be male (table2) and the remainder (34%) was female this reflect that lung cancer are male predominant and this result is consistent with that of the Elsayed I Salim, Abdul Rahman Jazieh, Malcolm A Moore; which they said that incidence sharply increases particularly in males more than in female.[13]

Among the patients of this study 73.3% were found to be smokers (table 3); hence, smoking was considered to be an important risk factor for developing lung cancer in this study also we found that 26.6%was non smoker and this result is consistent with that of the Parkin DM.[10]

Among the patients of this study 87% were found to have non small cell histopathology and 13% have s mall cell histology (table 4); hence, n.s.c.l.c was considered to be more predominant than s.c.l.c histology and this result is consistent with that of the In past decades, squamous cell carcinoma was the most common type, but in recent years it has decreased in frequency and adenocarcinoma has increased to become the most common type (49%) in the

United States. In some parts of the world, specifically Europe, squamous cell carcinoma is apparently still the most common type.[7]

Among the patients of this study 23% presented with shortness of breath, 16.6% have chest pain, 3.3% have hoarseness of voice, 3.3% presented with vertigoand 50% complain of cough with haemoptysis and we found that cough with haemoptysis is the most common presentation followed by shortness of breath and less with chest pain followed by back pain and hoarseness of voice, vertigo this result is consistent with that of the G. Buccheri and D. Ferrigno.

Among the patients of this study 66.6% of patient diagnosed with bronchscopic biopsy, 16.6%with sputum cytology, 10% with fine needle aspirateand6.7% with supra clavicular lymph node biopsy in our study we found that bronchoscopic biopsy represent the most dependable type of diagnosis followed by the sputum cytology and for less extent by fine needle aspirate and at last the supra clavicular lymph node biopsy this result is consistent with that of Toloza EM, Harpole L.[7]

Our patient in this study present either as locally advanced or metastatic stage and The modality of treatment received by the patients was divided in our study as the use of combination of both CHEMOTHEAPY and RADIOTHERAPY in18 patient (60%) and In regard to the use of radiotherapy only 4 patients (13.3%) were in need for radiotherapy during their course of the disease for palliative treatment; while 8 patients (27%) were in need for chemotherapy as part of their management due to metastasis of disease, table(7) and this result is consistent with that of Richard T. Hoppe, MD et al.[15]

The modality of presentation of stage four in our study present as 2 patient (13.34%) with brain secondaryand7 patient (46.67%) with bone secondary and 6 patient (40%) with liver secondary in our study patient with metastasis to bone represent the most common site of lung secondary followed by liver secondary and then brain secondary table (8) and this result is consistent with that of Gregory R. Mundy who said that; the most common human cancers (lung, breast and prostate) have a great avidity for bone, leading to painful and untreatable consequences.[17]

CONCLUSION AND RECOMMENDATIONS

From the present study we can conclude the following.

1. Important risk factors for developing lung cancer are age, sex, smoking. lung cancer could be suspected in elderly patients above 60 years of age who present with hemoptysis and shortness of breath more than three weeks especially if associated with other risk factors.
2. Smoking is the most important risk factor for developing lung cancer (73% of cases are smokers). Smokers with high number of cigarette smoking and long duration of smoking have higher risk than those with less amount and short period of smoking.
3. Hemoptysis and shortness of breath are the main presenting sign and symptom while others depending on site of involvement and tumor extension.
4. Slightly more than half of cases presented with bone metastasis and for lesser extent with liver secondary and then brain secondary.
5. Squamous cell carcinoma is the most histological type, followed by adenocarcinoma while small cell type represent the least type.
6. Most common stage at time of presentation is advanced stage.

Recommendations

1. Giving particular care if more than one risk factor is present and activates and enhance the role of primary care practitioners, as a part of a general evaluation, inquire about hemoptysisin a patient from at risk population. If a positive response is obtained, the patient can be referred to an respiratory specialist for appropriate evaluations.
2. Doing serial investigations especially chest x-ray and CT scan for those old and smoker patients whom presented with cough and haemoptysis more than three weeks for early detection of disease.
3. Cessation of smoking which is considered as the major risk factor.
4. Further studies regarding other parameters not mentioned in this study are recommended.

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