Analysis of fiber optic Bronchoscope findings in Respiratory unit at Al_ Diwanyah teaching hospital in 2014-2015

Atheer Mahmood Ali , M.B.CH.B,MD (R e s p i r a t o r y m e d i c i n e)
AbduL Raheem Hadi Albadri,M.B.CH.B,MD (Respiratory medicine) ***ALDiwanyah teaching hospital(chest department)***

Abstract

Background: Fiber-Optic bronchoscopy is a diagnostic and therapeutic tool for the management of the respiratory diseases with high safety profile

Aim of study: To analyse the findings of the fiberoptic bronchoscopies of the included patients in our study..

Patients and Methods:

A retrospective study was done to find out the demographic profiles, bronchoscopic indication, findings , diagnosis and complications of the patients who underwent bronchoscopies examinations in the respiratory unit at Aldiwanyah teaching hospital in 2014 and 2015.

Results:

Amongst the 102 patients, commonest indication of bronchoscopy was radiological opacity found in 81.2% of patients, followed by unexplained cough 10% of patients. Most common clinical presentations of the patients was Cough (81.4%), followed by dyspnea (34.3%).

Out of 102 patients, 61 patients (59.8%) were males, 44 patients were current smokers.

A 41 patients (40.2%) were females, 21 patients were current smokers.The patient's age range from 15 to 75 years, the mean age of males were 58.8 ± 10.6 and for females were 52 ± 15.4.The most common finding on bronchoscopy was abnormal mucosa found in about 55.9% of patients.

Malignancy was seen in 46.1% cases, while Tuberculosis seen in 9.8%.

The sequamous cell carcinoma was the most histological type (44.7%) of patient diagnosed with cancer.

In the 102 patient the bronchoscopy done with neither death nor serious complications occurrence likes pneumothorax or cardiac arrest.

The most common complication was mild nasal bleeding during procedure in (24.51%).

Conclusion:

Fiberoptic bronchoscopy is a useful diagnostic test for different lung pathologies with high safety profile regarding sever complications.

Introduction

Definition:

Bronchoscopy is the procedure of passing a telescope or camera into the trachea to inspect the large and medium-sized airways.

It may be performed with a flexible scope, using local anesthetic with or without sedation, favored by physicians, or under a general anesthetic with a rigid scope, used mostly by cardiothorasic surgeons. Airways can be visually inspected, samples taken, and therapeutic procedures can performed.(1)

The flexible fiberoptic bronchoscopy (FFB)

FFB has greatly enhanced the diagnosis and understanding of lung disease and has evolved into the most common diagnostic procedure in pulmonary medicine.It is a universally accepted procedure both in diagnosis and management of different pulmonary disease, FFB can be performed under local anesthesia in various

clinic/hospital setting providing maximal visualization of tracheobronchial tree, and if performed carefully can be a thoroughly safe procedure. Samples can be taken by several ways like bronchial biopsy, bronchial brushing, aspiration, trans bronchial lung biopsy, trans bronchial needle aspiration and these combined advantages enhance the diagnostic value of bronchoscopy. (4)

Indications

1. Suspected lung cancer Patients who have a central mass <4cm
2. Suspected pulmonary infection, such as TB.
3. Suspected ILD if aTransbronchial biopsy(TBB) will provide an adequate sample for diagnostic..
4. Investigation of hemoptysis.
5. Investigation of stridor.
6. Foreign body removal if this is located proximally.
7. Therapeutic indications include central airway obstruction, sputum plugging, and possibly emphysema. (1)

Absolute **contraindications**1. Uncontrolled arrhythmias.2. Uncorrectable hypoxemia.3. Lack of patient cooperation.4. Lack of skilled personnel.5. Lack of appropriate equipment and facilities.6. Unstable angina.(5)

Relative contraindications/take care

1. If a patient has saturations below 90% on air at rest or < 8 kPa, the risk of significant hypoxia during bronchoscopy is increased.
2. FEV1 < 40% predicted.
3. Blood clotting abnormalities, particularly platelet level <50,000/mm3.
4. Uremia, pulmonary hypertention(PHT), superior venacva obstruction(SVCO), liver disease, and immunosuppression predispose to hemorrhage.
5. Recent myocardial infarction(MI) may be associated with cardiac ischemia during bronchoscopy. Wait until 4 weeks after, if possible (otherwise, liaise with cardiology). (1)

Disadvantage:

In bronchitic patients or in patients with tight tracheal stricture, passing the fiberoptic bronchoscope alone simply can derang blood gases.(6)

Topical Anesthesia

Lignocaine 2-4 % is considered much safer and is the most widely used agent. It can be used as spray from a hand atomizer, pressurized aerosol container, nebulizer, and in' a gel form. It is advised that a total of

400 mg. should not be exceeded though sometimes more doses are required. In the perusal insertion mucosal anesthesia can be obtained in the nose either by inhalation of lignocaine solution from a nebulizer, by spraying with a hand atomizer, or by introducing lignocaine gels.

In per oral route anesthesia is employed by pressurized spray, which provides adequate topical anesthesia. An alternative technique increasingly used is to inject quickly about 5ml of 2-4 % Lignocaine through the cricothyroid membrane. (10)

Procedure

Preparing the patient

1. Explanation of the procedure to the patient.
2. Premedication- if premedication is to be used then atropine (0.6-1.2 mg) is injected i.m. 30-40 minutes before starting the procedure .
3. Positioning of the patient. The procedure is done either in sitting position, semi recumbent position (45° on the examination couch), or supine (lying position).The sitting position is comfortable to the patient, provide face to face contact, and the patient can easily cough.The semi recumbent position is not very comfortable or stable position because the patient might slide down the couch unless an adjustable footboard is

provided.If the flexible bronchoscope is to be passed through a rigid bronchoscope or endotracheal tube under general anesthesia, the patient will be in lying position. (6, 7, 8, 9) Bronchial mucosa - the color of the bronchial mucosa can vary greatly with the intensity and type of lighting used in the bronchoscope, and each operator must familiarize himself with normality under his own standardized conditions. The mucosa throughout the bronchial tree is normally a pale pink or flesh tint, and often fine vessels can just be seen creating a delicate tracery particularly around the carina and in the main bronchi. (6).

Abnormal endobronchial findings:

A.inflammatory and associated changes.

B-Tuberculosis:

It produces 3 main bronchoscopically visible changes:

1. Endobronchial inflammation: which includes inflamed and swollen mucosa, blood or purulent secretions, granuloma, and ulceration. Healing may lead to bronchial scaring.Miliary tuberculosis may be seen with multiple deposits.
2. Endobronchial distortion: due to extrabronchial lymph nodes enlargement causing bronchial compression.
3. Tuberculous granulation tissue: may erupt through the mucosa to form a tumor like mass

C-Tumors:Bronchoscopically tumors or metastatic lymph nodes may produce visible changes of 3 main types:1. Simple distortion of the normal anatomy by external pressure on the bronchial tree.2. Involvement of the bronchial wall with local distortion or ulceration of the mucosa.

3. Intraluminal eruption of the growth. (6, 12, 13).

1. Secretion

Takings pecimens

Gross specimens of secretions can be obtained directly via the aspirating channel of the fiberoptic bronchoscope. Maximum yield is obtained by drawing a little normal saline through the instrument at the end of the operation.(14)

2. Brushings

Brushings taken from the surface of areas suggesting tumor tissue frequently give positive diagnosis. The method is particularly useful in small bronchi where a tumor beyond vision is suspected. (18)

3. Endotracheal biopsy

It is the most critical bronchoscopic maneuver. The specimen taken by fiberoptic bronchoscope is very small but usually adequate because its source can be clearly chosen. (17, 19)

4. Needle aspiration

Sometimes the best chance of reaching a diagnosis bronchoscopically when no intraluminal lesion is found is to obtain biopsies from enlarged lymph nodes that are obviously distorting bronchi. Transbronchial needle aspiration is the safest technique here, through either the rigid or flexible bronchoscope particularly if confined to the widened carina. (20, 21)

5. Transbronchial lung biopsy

Bronchoscope provides one of the safest ways of obtaining small biopsies of the lung parenchymal. It helps in elucidating diffuse diseases which have defied diagnosis by other means e.g. pneumocystis carini infection in immunosuppressed patients. (14)

The right lower lobe is the safest place from which to obtain biopsies because the basal bronchi are the most directly accessible to the forceps both for biopsy itself and for subsequent control of hemorrhage.

(22, 23)

6. Broncho-alveolar lavage (Br. Wash)

This technique allows the collection of fluid and cells from peripheral lung tissue. Cell counts and estimates of various proteins in these specimens may help in differential diagnosis of diffuse pulmonary lesion. (6, 14)

Patients and Methods

A cross sectional study was earned out on 102 patients were performed fiberoptic bronchoscopy in respiratory unit at Al diwanyah teaching hospital from January 2014 to december 2015.

Detailed clinical history, physical examination and routine investigations were carried out in all the participants. All the patients were subjected to sputum examination (acid fast bacilli (AFB) staining, gram staining and for malignant cells), hematological examination and coagulation profile. Contraindications, if any were ruled

out.Chest X-rays in both PA and lateral view in some of them

and CT scan were obtained in all the patients before the procedure to

define the location of the lesion. PFT was performed in some cases. All the patients were then subjected to fiberoptic bronchoscopy. Flexible bronchoscopy was performed with fiberoptic scope Through trans nasal route, sedation was not performed,

with topical anesthesia (xylocaine). O2 supplementation were

given through nasal cannula at concentration 10 L/min for some patient when needed.Oxygenation was monitored throughout the procedure with pulse oximetry, blood pressure and pulse rate was also monitored. Appropriate samples such as bronchoscopic appears, brushing and biopsy were obtained depending on the lesion after thorough evaluation of endobronchial tree. Samples were subjected to cytology and histopathology depending upon the clinical diagnosis and bronchoscopic findings.

Results

102 patient were included in our study ,61 patient(59.8%) were males,41(40.2%)were females. The patients age range from(15 to75)years ,the mean age of male were 58.8+/- 10.6 and for female were 52+/-15.4 ,most of the patients age lie between 60 and 69 years .

In male ,44patients were current smokers,10 patients were non_ smokers,and 7 patients ex. Smokers .

The demographical data were shown in table(1) and figure (1).

The radiological opacity was the commonest indication of bronchoscopy in 83 patients (81.4%) of the total patients , followed by chronic cough 10 patients (10%), The third indication was haemoptysis in 9 patients (8.6%).were shown in figure (2).

In the 102 patients cough was the most common clinical presesntation (81.4%), shortness of breath (34.3%), haemoptysis(37.3%), fever (12.7%) and hoarsness of voice (3.9%). Most of the patients presented with two symptoms.were shown in table (2).

Bronchoscopies were performed in respiratory unit and the findings written in the bronchoscope report .

The most common findings on bronchoscopy was abnormal mucosa in (55.9%)of patients ,endobronchial growthin (40.2%)of patients , widening of carina in (21.6%) and vocal cord palsy in (8.8%) .

The frequency of bronchoscopic findings were shown in table (3).

Biopsy taken in 34 patients (33.3%) and had been sent for histopathological examination.

While bronchial wash and post bronchoscopic sputum collection had

been done for all the patients and were sent for cytological examination and acid fast bacilli staining.
Bronchial brush had been done for most of the patients with abnormal mucosa .
On cytological examination of bronchial wash and biopsies histopathological examination, tumor had been detected in 46.1%, acid fast bacilli had been detected in 9.8% and non specific infection in the remaining 44.1% were shown in the table (4).
In the 47 patients who diagnosed with lung tumor , the squamous cell carcinoma was the commonest histological type (44.7%) followed by adinocarcinoma (40.4%) and small cell carcinoma (14.9%). As shown in Figure (4).
The complications which happened to our patients who underwent fiber optic bronchoscopy in respiratory unit at AL-diwanyah teaching hospital in 2014-2015 were shown in table (5).

On cytological examination of bronchial wash and biopsies histopathological examination, tumor had been detected in 46.1%, acid fast bacilli had been detected in 9.8% and non specific infection in the remaining 44.1% were shown in the table (4).
In the 47 patients who diagnosed with lung tumor , the squamous cell carcinoma was the commonest histological type (44.7%) followed by adinocarcinoma (40.4%) and small cell carcinoma (14.9%). As shown in Figure (4).
The complications which happened to our patients who underwent fiber optic bronchoscopy in respiratory unit at AL-diwanyah teaching hospital in 2014-2015 were shown in table (5).

Discussion:

The total patients number included in our study was 102 patients,61 patients (59.8%) were males, 41 (40.2%) were females.The patients age range from (15 to75) years, the mean age of males were 58.8 ± 10.6 and for females were 52 ±15.4 ,the age group of maximum patients lie between 60 and 69 years.The male current smoker was more than female in more than doubIe, in males, 44 patients were current smokers,17 patients were non-Smokers while In females, 21 patients were current smokers, 20 patients were non-smokers .The commonest clinical presentation was cough (81.4%) Which is similar to a study conducted by Prakash UB. et al ,and astudy byMuhammed W. et al .[20,26]. In our study, radiological opacity was the commonest indication for performing bronchoscopy (81.4%) keeping in mind suspected malignancy in the patients, it correlated with the studies conducted by Garg B et al ,Jindal et al and Muhammed W. et al [14,15,26]. The second indication was unexplained chronic cough in (10%) of patients followed by haemoptysis (8.6%).All the patients done to them bronchial wash and post bronchoscopy sputum collection and were sent for cytological examination and acid fast bacilli staining .The bronchial wash collection from the bronchial tree was done by pushing 30-50 ml of isotonic saline and re-aspirating it and the sputum coiiected during and post the bronchoscopy in sputum sample collecting cups.The most common bronchoscopic finding was Abnormal mucosa .In (55.9%) of patients and bronchial brush had been done in most of these patients brushing material was smeared directly on to at least four glass slides and stained with alcohol stain.Endobronchial growth had been seen in 41 patients (40.2%) ,In 34 (82.9%) of these patients endobronchial biopsy was taken and sent for histopathological examination while the remained (17.1%) biopsy was not taken due to unavilability of forceps instrument.Endobronchial biopsy was done with regular cup-forceps.In the remaining patient (9.8%) the

bronchoscopy was normal. Widening of the carina was seen in (21.6%) and vocal cord palsy in (8.8%). This is comparable with Hussen W.M. study in which widening of the carina and vocal cord palsy were seen in (8.8%) and (5.2%) respectively. (29)

So the fiberoptic bronchoscopy is useful to determine the operability,because these patients are considered inoperable.

IN the 102 patients the commonest final diagnosis was non-neoplastic lesions in 55 patients (53.9%) while the neoplastic in 47 patient (46.1%), in other studies Muhammed W. et al the non-neoplastic lesions was (73.51%) and neoplastic (26.49%), Hansen et al reported 31% cases of neoplastic category and 62% as non-neoplastic, Abdul Aziz et al found 28% neoplasm and 72% cases were non-neoplastic disease. (26 ,13 ,25)

Out of the 55 patients with non-neoplastic lesions tuberculosis confirmed 10 patients (9.8%).

Out of the 47 patients diagnosed as neoplastic lesions the diagnosis was confirmed by biopsy of endobronchial growth in 23 patient (48.93%),

this is comparable with Hussen W.M. study in which endobronchial biopsy confirm malignancy in 72% of cases of visible tumors and Muhammed W. et al study in which endobronchial biopsy confirm the diagnosis in (70.5%) (29 ,26)and the other 24 patients diagnosed by cytological examination of brushing , bronchial wash and post bronchoscopy sputum collection .

In the patients who diagnosed with lung tumor the sequamous cell carcinoma was the commonest histological type (44.7%) followed byadinocarcinoma (40.4%) while the small cell carcinoma (14.9%),similar to many iraqi studies like Abdul Redha K. et al , F. A. Al-Alusi et al , Tahseen Al-Saleem et al and Ali Sadiq M. et al. (30,31,32,33)While in Adnan M. et al adenocarcinoma was the commonest cell type in(41%) followed by squamous cell carcinoma (28.4%) followed by small cell carcinoma (11.4%). ,and Muhammed W. et al study the adinocarcinoma was the commonest histolagical type also in (41%) followed by sequamous cell carcinoma (31%) and small cell carcinoma in(28%) of patients (34,35).In the 102 patient the bronchoscopy done with neither death nor serious complications occurrence likes pneumothorax or cardiac arrest.The most common complication was mild nasal bleeding during procedure in (24.51%).

Conclusions

Fiberoptic bronchoscopy is a useful procedure for diagnosis of different pulmonary conditions.- The fiberooptic bronchoscopy done under local anesthesia with or without sedation with very low rate ofsever complications and in our sampled patients there was no mortality.

Recommendations

1. The use of fiberoptic bronchoscopy in diagnosis of pulmonary diseases is recommended because it is very useful and relatively safe procedure.
2. Good sample with adequate tissue should be taken to increase the percentage of conclusive results.
3. We recommend the doing of bronchial wash and phoscopy sputum collection with biopsy taking to increase the percentage of conclosive result.

References

1. Stephen C, Grace R, John S, Sophie W, John W. OXFORD HANDBOOK OF RESPIRATORY MEDICINE: Practical procedures. 2014; Third edition: 748-819.

2 . Anderson HA, Faber LP: Diagnostic and therapeutic applications of the bronchoscope. Chest. 1978; 73 (suppl): 685.

3. Arthur D.Boyd; Endoscopy: Bronchoscopy and Esophagoscopy in Sabiston David C., Frank C. Spencer: surgery of the chest. Volume 1 sixth edition Philadelphia. W.B. saunders company.
1996: 69—98.

4. Mark Tedder, Ross M. Ungerleider. : Bronchoscopy, David C.

Sabiston, Jr., Textbook of surgery, 15lh ed. W. B. Saunders

Company, 1997.

5 .Robert J, Joel D, Talmadge E, Stephen C, John F, Jay A, Arthur S.

MURRAY & NADEL,S TEXTBOOK OF RESPIRATORY MEDICINE. 2016: Sixth edition :372

6 . Peter Stradlings. Diagnostic bronchoscopy a teaching manual.

Sixth edition. Edinburgh. Churchill Livingstone. 1993.

7. Corsello-BF, Funahashi-A, Hranicka—LJ: Flexible fiberoptic bronchoscopy: Its role in diagnosis of lung lesions. -J- Postgrad- Medicine. 1982 72: 95-105, 108.

8. Jackson C, Jackson CL: Bronchoesophagology. Philadelphia: W.B.

Saunders, 1950.

9. Ikeda S: Flexible bronchofiberscope. Annals of otology, Rhinology
and Laryngology. 1970; 79: 916-923.

10. Newton-DA, Edwards GF: Route of introduction and method of

anesthesia for fiberoptic bronchoscopy. Chest 1979 ;75 :650

11. Oho K, Amemiya R: Bronchial nomenclature in practical

fiberoptic bronchoscopy. First edition. London— Chapman and

Hall-1980; 26-38.

12. Abal Area J,Parente I,Almazan RL.Lung cancer and chronic obstructive pulmonary disease. Lancet 1977; 2:523-36.

13. Hansen R, Zavala DC, Rhodes ML.Transbronchial lung biopsy via

flexible fiberoptic bronchoscopy.Am Rev Respir Dis 1986;

114:112-28.

14. Garg B ct al .lndian J Chest Dis Allied Sci 2013;55:145-l48.

15. Jindal SK,Behera D,Dhand R, kashyap S, Malik SK.Flexible bronchoscopy in clinical practiceza review of 100 procedure. Indian J Chest Dis Allied Sci 1985; 27:153-8.

16. Cohen BH, Diamond EL,Graves CG et al. A common familial component in lung cancer and chronic obstructive pulmonary disease. Lancet 1977; 2:523-36.

17. Kalra S, D'Souza G, Bhusnurmath BJindal SK. Transbronchial lung biopsy in diffuse lung disease:a study of 28 cases. Indian J Chest Dis Allied Sci 1989; 31:265-70.

18. Hsiegh YC, Chiang CH, and Shen CY: Diagnostic flexible

fiberoptic bronchoscopy: analysis of results of biopsy and brush in l05 patients in IA. Nakhosyeen and W. Maassen: Bronchology. The Netherlands. Martinus Nijhoff. 1981; 72-75.

19. El-Hassani NB, and kays MA: Rigid versus flexibe bronchscopy in

diagnosis of bronchogenic carcinoma. Thesis, 1994.

20. Prakash UBS, Offord KP, Stubbs SE.Bronchoscopy in North

America: The ACCP survey.chest 1991; 100:1668-75.

21. Hershko E, Reichert N, and Baum GL: Prevalence and treatment of complications of 550 fiberbronchoscopies in J.A. Nakhosteen and W.Maassen: bronchlolgy. The Nether lands. Martinus Nijhoff.
1981; 72-75.
22. Suratt Pm, Smiddy J F, Gruber B: Deaths and complication associated with fiberoptic bronchscopy. Chest. 1976 ; 69 :747-51.
23. Sheldon RL: flxible fiberoptic bronchoscopy. Primary-care. 1985.

; 12:299-315.

24. Augusseau S, Moun'quand J, Brambilla C, Paramelle B: Cytological survey of bronchial brushings and aspirations performed during fiberoptic bronchoscopy. Arch-Geschwulstforsch. 1978; 48(3) :245- 9.
25. Abdul al Aziz, Fedullo PF: Trans bronchial needle aspiration in the diagnosis of submucosal and peribronchial bronchogenic carcinoma. Chest. 1985; 88:49.

26. al obaidy ,Muhammed waheeb,Haidar M.:Analysis of bronchoscopic findings in respiratory unit at Baghdad teaching hospital in 2015. A Thesis Submitted to the College of Medicine and the Committee of Postgraduate studies of Baghdad University in Partial Fulfillment of the Requirements for the Degree of Diploma in Respiratory Medicine. 2016:21-9

27. Fletcher EC, Levin DC: Flexible fiberoptic bronchoscopy and fluoroscopically guided trans bronchial biopsy in the management of solitary pulmonary nodule. West J. Med. 1983; 138: 364.28. Popovich J, Jr, Kvale PA: Diagnostic accuracy of multiple biopsies from flexible fiberoptic bronchoscopy: A comparison of central versus peripheral carcinoma. Am. Rev. Resp. Dis. 1982;
125: 521.
29. Hussen, W.M. and Mansour M.M.Role of fiberoptic bronchoscopy in the diagnosis of bronchogenic carcinoma. A thesis submitted to the scientific Council of Thoracic & Cardiovascular Surgery in partial fulfillment of requirements of the degree of follow ship of the Iraqi Board for Medial Specializations .Baghdad 2013:21-22
30. Al-Khafajy, abdul Redha K.:Lung Cancer In Iraq (2001 – 2003).unpublished thesis for the degree of diploma in respiratory medicine, Baghdad University, 2004. (Unpublished)
31. Al-Alusi ,F. A. Lung cancer in Iraq in the decade (1986 – 1995). J Fac Med Baghdad 2002; 44(2):175-178.
32. Al-Saleem, tahseen et al: Lung cancer in Iraq. J Fac Med Baghdad 1985;27(1):57-61.
33. Al-Tamimi ali Sadiq M.:Histopathological types of primary lung cancer in a sample of Iraqi patients. A thesis submitted for the degree of diploma in respiratory medicine, Baghdad University,September 2012. Unpublished article.
34. Al jubouri adnan M., Muhammed Waheeb Al obaidy :Histopatholgical types of primary lung cacer Hospital based.Journal of dental and medical sciences(JDMS) 2015. International organization of scientific research (IOSR), Vol 14, Issue 7 Ver 4,pp 22-26,
35. al,Obaidy, muhammed Waheeb: Fibro optic bronchoscope in primary bronchogenic carcinoma, jou facu of medicine Baghdad 2014,vol56,issue 4,pp 367-371.

Table 1. Demographic data of patients who a bronchoscopy Done to them in the respiratory unit at Al diwanyah teaching hospital

Age (y);	mean±SD
Male	**58.8±10.6**
Female	**52.0±15.4**
	Age Group; n(%)
< 40 y	**11(10.8)**
40-59 y	**33(32.4)**
≥ 60 y	**58(56.9)**
Sex; n(%)	
Male	**61(59.8)**
Female	**41(40.2)**
Smoker; n(%)	
Yes	**55(53.9)**
No	**47(46.1)**

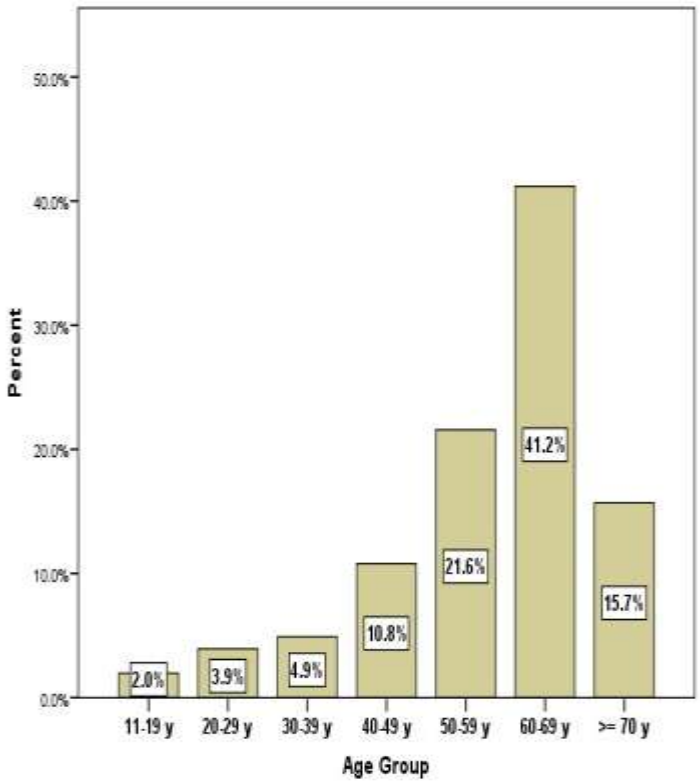

Figure 1. Frequency of age group in years.

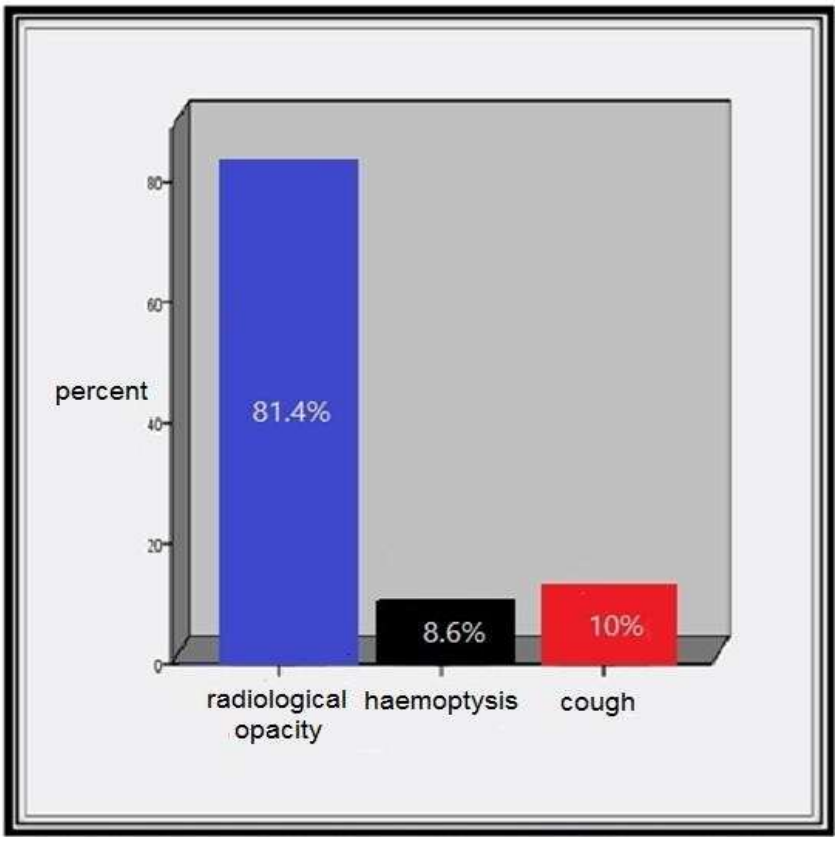

Figure 2. frequency of indications of FOB in the respiratory unit at Al diwanyah teaching hospital

Table 2: Presenting clinical features of sampled patients**:**

Clinical Feature	N=103	100.0%
Chronic cough	83	81.4%
Dyspnea	35	34.3%
Hoarseness of voice	4	3.9%
Fever	13	12.7%
Hemoptysis	38	37.3%

Table 3. Frequency of bronchoscopic findings:

Examined area	Finding	N	%
Vocal cord	Paralyzed	9	**8.8 %**
Carina	Widened	22	**21.6%**
Right bronchial tree	Abnormal mucosa	29	**28.4%**
	Endobronchial growth	22	**21.6%**
Left bronchial tree	Abnormal mucosa	28	**27.5%**
	Endobronchial growth	19	**18.6%**
Normal		**10**	**9.8%**

Table 4. Frequency of cytological findings.

Cytological findings	No. of patients	Percentage%
Nonspecific inflammatory Cells	45	**44.1%**
Malignant cells	47	**46.1%**
Acid fast bacilli	**10**	**9.8%**

Table 5. Complications of FOB in the respiratory unit at Al diwanyah teaching hospital:

Complications of FOB	Number of patients
Bleeding from the nose	**25**
Hypoxia	**0**
Hemoptysis	**22**
Arrhythmia	**1**
Bronchospasm	**1**

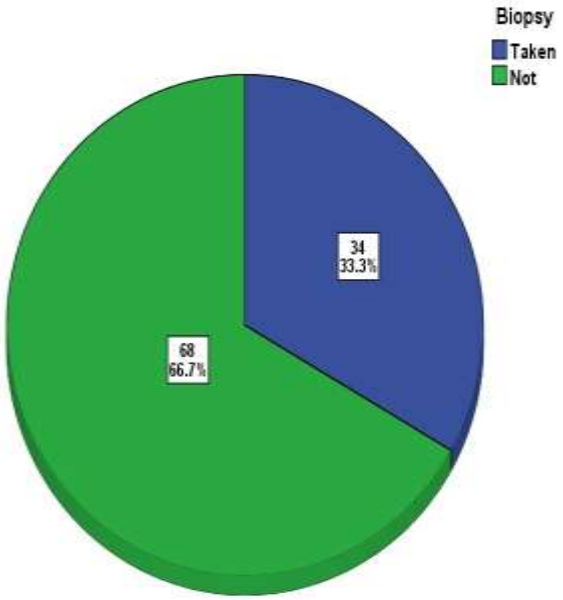

Figure 4. Histological types of detected lung tumors.

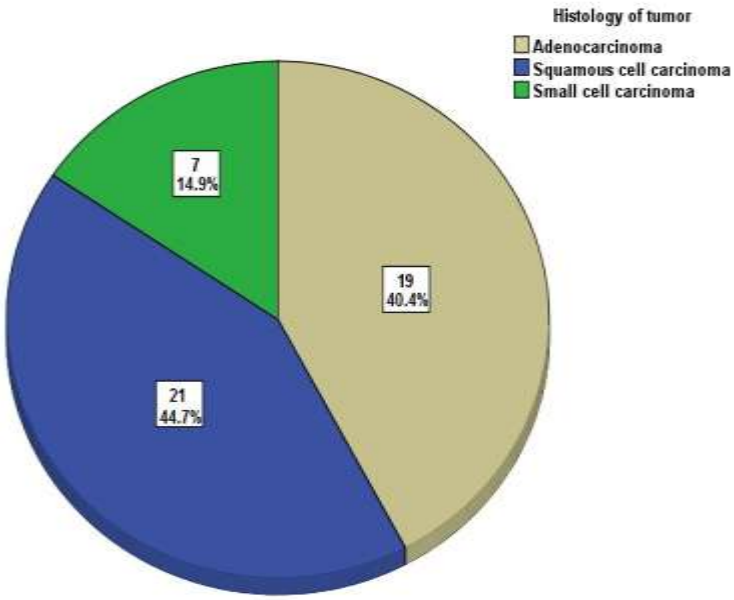

Figure 4. Histological types of detected lung tumors.

References:

1. Stephen C, Grace R, John S, Sophie W, John W. OXFORD HANDBOOK OF RESPIRATORY MEDICINE: Practical procedures. 2014; Third edition: 748-819.
2 . Anderson HA, Faber LP: Diagnostic and therapeutic applications of the bronchoscope. Chest. 1978; 73 (suppl): 685.
3. Arthur D.Boyd; Endoscopy: Bronchoscopy and Esophagoscopy in Sabiston David C., Frank C. Spencer: surgery of the chest. Volume 1 sixth edition Philadelphia. W.B. saunders company.
1996: 69—98.
4. Mark Tedder, Ross M. Ungerleider. : Bronchoscopy, David C.Sabiston, Jr., Textbook of surgery, 15lh ed. W. B. SaundersCompany, 1997.
5 .Robert J, Joel D, Talmadge E, Stephen C, John F, Jay A, Arthur S.
MURRAY & NADEL,S TEXTBOOK OF RESPIRATORY MEDICINE. 2016: Sixth edition :372
6 . Peter Stradlings. Diagnostic bronchoscopy a teaching manual.
Sixth edition. Edinburgh. Churchill Livingstone. 1993.
7. Corsello-BF, Funahashi-A, Hranicka—LJ: Flexible fiberoptic bronchoscopy: Its role in diagnosis of lung lesions. -J- Postgrad-Medicine. 1982 72: 95-105, 108.
8. Jackson C, Jackson CL: Bronchoesophagology. Philadelphia: W.B.Saunders, 1950.
9. Ikeda S: Flexible bronchofiberscope. Annals of otology, Rhinology and Laryngology. 1970; 79: 916-923.
10. Newton-DA, Edwards GF: Route of introduction and method ofanesthesia for fiberoptic bronchoscopy. Chest 1979 ;75 :650
11. Oho K, Amemiya R: Bronchial nomenclature in practical fiberoptic bronchoscopy. First edition. London—Chapman and Hall-1980; 26-38.
12. Abal Area J,Parente I,Almazan RL.Lung cancer and chronic obstructive pulmonary disease. Lancet 1977; 2:523-36.
13. Hansen R, Zavala DC, Rhodes ML.Transbronchial lung biopsy via flexible fiberoptic bronchoscopy.Am Rev Respir Dis 1986; 114:112-28.
14. Garg B ct al .lndian J Chest Dis Allied Sci 2013;55:145-l48.
15. Jindal SK,Behera D,Dhand R, kashyap S, Malik SK.Flexible bronchoscopy in clinical practiceza review of 100 procedure. Indian J Chest Dis Allied Sci 1985; 27:153-8.
16. Cohen BH, Diamond EL,Graves CG et al. A common familial component in lung cancer and chronic obstructive pulmonary disease. Lancet 1977; 2:523-36.
17. Kalra S, D'Souza G, Bhusnurmath BJindal SK. Transbronchial lung biopsy in diffuse lung disease:a study of 28 cases. Indian J Chest Dis Allied Sci 1989; 31:265-70.
18. Hsiegh YC, Chiang CH, and Shen CY: Diagnostic flexible
fiberoptic bronchoscopy: analysis of results of biopsy and brush in l05 patients in IA. Nakhosyeen and W. Maassen: Bronchology. The Netherlands. Martinus Nijhoff. 1981; 72-75.
19. El-Hassani NB, and kays MA: Rigid versus flexibe bronchscopy in
diagnosis of bronchogenic carcinoma. Thesis, 1994.
20. Prakash UBS, Offord KP, Stubbs SE.Bronchoscopy in North
America: The ACCP survey.chest 1991; 100:1668-75.
21. Hershko E, Reichert N, and Baum GL: Prevalence and treatment of complications of 550 fiberbronchoscopies in J.A. Nakhosteen and W.Maassen: bronchlolgy. The Nether lands. Martinus Nijhoff.
1981; 72-75.
22. Suratt Pm, Smiddy J F, Gruber B: Deaths and complication associated with fiberoptic bronchscopy. Chest. 1976 ; 69 :747-51.
23. Sheldon RL: flxible fiberoptic bronchoscopy. Primary-care. 1985.; 12:299-315.
24. Augusseau S, Moun'quand J, Brambilla C, Paramelle B: Cytological survey of bronchial brushings and aspirations performed during fiberoptic bronchoscopy. Arch- Geschwulstforsch. 1978; 48(3) :245- 9.
25. Abdul al Aziz, Fedullo PF: Trans bronchial needle aspiration in the diagnosis of submucosal and peribronchial bronchogenic carcinoma. Chest. 1985; 88:49.
26. al obaidy ,Muhammed waheeb,Haidar M.:Analysis of bronchoscopic findings in respiratory unit at Baghdad teaching hospital in 2015. A Thesis Submitted to the College of Medicine and the Committee of Postgraduate studies of Baghdad University in Partial Fulfillment of the Requirements for the Degree of Diploma in Respiratory Medicine. 2016:21-9
27. Fletcher EC, Levin DC: Flexible fiberoptic bronchoscopy and fluoroscopically guided trans bronchial biopsy in the management of solitary pulmonary nodule. West J. Med. 1983; 138: 364.

28. Popovich J, Jr, Kvale PA: Diagnostic accuracy of multiple biopsies from flexible fiberoptic bronchoscopy: A comparison of central versus peripheral carcinoma. Am. Rev. Resp. Dis. 1982;
125: 521.
29. Hussen, W.M. and Mansour M.M.Role of fiberoptic bronchoscopy in the diagnosis of bronchogenic carcinoma. A thesis submitted to the scientific Council of Thoracic & Cardiovascular Surgery in partial fulfillment of requirements of the degree of follow ship of the Iraqi Board for Medial Specializations .Baghdad 2013:21-22
30. Al-Khafajy, abdul Redha K.:Lung Cancer In Iraq (2001 – 2003). unpublished thesis for the degree of diploma in respiratory medicine, Baghdad University, 2004. (Unpublished)
31. Al-Alusi ,F. A. Lung cancer in Iraq in the decade (1986 – 1995). J Fac Med Baghdad 2002; 44(2):175-178.
32. Al-Saleem, tahseen et al: Lung cancer in Iraq. J Fac Med Baghdad1985;27(1):57-61.
33. Al-Tamimi ali Sadiq M.:Histopathological types of primary lung cancer in a sample of Iraqi patients. A thesis submitted for the degree of diploma in respiratory medicine, Baghdad University, September 2012. Unpublished article.
34. Al jubouri adnan M., Muhammed Waheeb Al obaidy :Histopatholgical types of primary lung cacer Hospital based.Journal of dental and medical sciences(JDMS) 2015. International organization of scientific research (IOSR), Vol 14, Issue 7 Ver 4,pp 22-26,
35. al,Obaidy, muhammed Waheeb: Fibro optic bronchoscope in primary bronchogenic carcinoma, jou facu of medicine Baghdad 2014,vol 56,issue
4,pp 367-371.