International Journal Dental and Medical Sciences Research
Volume 4, Issue 1, Jan-Feb 2022 pp 698-704 www.ijdmsrjournal.com ISSN: 2582-6018

"Diagnostic Yield of Fibre Optic Bronchoscopy and CT Thorax in Patients Presenting With Hemoptysis and Normal Chest X-Ray".

Dr. Kunal Vaghela, Dr.R.C.Meena
Pg resident department of respiratory medicine
Professor and head department of respiratory medicine
National institute of medical science & research, jaipur, rajasthan

Submitted: 10-02-2022 Revised: 22-02-2022 Accepted: 25-02-2022

ABSTRACT OF THE SEED ARTICLE
The value of bronchoalveolar lavage in the diagnosisof sputum smear-negativepulmonary tuberculosis.

Novin Nikbakhsh, Masomeh Bayani, Sepideh Siadati

Background and Objectives: Sputum smear staining for acid-fast bacilli is initial approach to the diagnosis of pulmonary tuberculosis (PTB) but more than 50% of cases are sputum smear-negative. This study was aimed to investigate the diagnostic value of fiberoptic bronchoscopy (FOB) guided bronchoalveolar lavage (BAL) in patients suspected to have tuberculosis.

Methods: This prospective cross-sectional study was carried out on 290 sputum smear-negative patients who were clinically suspicious for PTB in 2006-12. All patients were subjected to FOB andBAL,then BAL specimens stained and cultured.

Results: Of the 290 patients, 173 cases (59.7%) were men and 117 cases (40.3%) were women with the age of 52.6±19.1 years (ranged 20-76 years). Of the total 290 BAL specimens, 110 specimens (38%) were positive for acid-fast bacilli. Sensitivity, specificity, PPV and NPV was 60%, 91%, 89% and 64%, respectively. Also, LR+ and LR- was 64.6% and 0.44%, respectively.

Conclusion: FOB guided BAL is a reliable, rapid and useful method for establishing the diagnosis of smear negative PTB with minimal complications.

SUMMARY
STUDY TITLE:
"Diagnostic yield of fibre opticbronchoscopy and ct thoraxin patients presenting with haemoptysis and normal chest x-ray"
AIM:
1. To study the diagnostic yield of fibre optic bronchoscopy and ct thorax.
2. Correlation ofct, fob and clinicalfindings in patients of hemoptysis with normal chest x-ray.

OBJECTIVES:
1. Clinical assessment of patient of hemoptysis with normal chest x-ray.
2. To study the role and diagnostic yield of fibre optic bronchoscopy in patients of hemoptysis with normal chest xray.
3. To study the role and diagnostic yield of ct thorax in patients of hemoptysis with normal chest xray.
4. Comparative study ofct ,fob and clinical findings in patients of hemoptysis with normal chest x-ray.

STUDY AREA:
All outdoor and indoor patient's 18 yearsand above attending department of respiratory medicine national institute of medicine science & research & hospital, jaipur, rajasthan

STUDY POPULATION:
Patients of haemoptysis with normal chest x-ray and of age 18 years and above .

INCLUSION CRITERIA:
1. Age 18 years and above.
2. One or more episodes of hemoptysis and normal chest X-ray.
3. Normal bleeding time, clotting time and prothrombin time.
4. Sputum for AFB smear– negative.
5. Willing to participate in the study and willing to give written informed consent.

EXCLUSION CRITERIA:
1. Severely dyspnoeic patients.
2. Unstable cardiovascular status.
3. Persistent massive hemoptysis.
4. Pregnant patients.

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5. Patients with diagnosed disease with hemoptysis as its manifestation.
6. Immunosuppressed & HIV positive patients.
7. Patients with asthma and COPD.
8. Patients with bleeding diathesis and deranged coagulation profile.

SAMPLE TECHNIQUE AND SAMPLE SIZE

Sample size was calculated using the formula, $n = N/(1+Ne)^2$
Where:n is the desired sample size.
N is total population.
e is margin for error.
As per the Prevalence of hemoptysis in AMBER minimum sample size calculated by above formula is 221.
STUDY DESIGN:Observational and cross sectional
TIME FRAME:January 2019 to June 2022
STATISTICAL ANALYSIS:
The data collected will be analyzed for statisticalvalidation with the software SPSS (Statistical Package for the Social Sciences).

I. INTRODUCTION

Coughing of blood emanating from the respiratory tract below the level of larynx is known as haemoptysis. Amount of blood varies from blood streaking of sputumto coughing up of massive volumes of pure blood which is life threatening . Bleeding can occur from any part of the lower respiratory tract. Bronchial artery being a high pressure system as compared to pulmonary artery system leads to massive hemoptysis.Hemoptysis of any degree needs thorough evaluation. The aim of evaluation is to find treatable cause and at times, to reassure the patient. The differential diagnosis of haemoptysis includes disorders arising within the airways and the pulmonary parenchyma[2.] Inflammatory processes (e.g., bronchitis and bronchiectasis) and neoplasms are the most common causes of blood arising within the airways. Within the pulmonary parenchyma common causes are infections, such as tuberculosis, pneumonia, Aspergillosis or lung abscess. Pulmonary edema due to left atrial failure can also give rise to haemoptysis.. A chest radiograph (CXR) is THE INITIAL Diagnostic evaluation of haemoptysis.However, about 20-30%of patients with haemoptysis may show no obvious changes in the CXR.[4]

Fiber Optic Bronchoscopy (F.O.B) allows examination of airways and sampling of secretions from the proximal endobronchial tree[6]. However, F.O.B has limitations as it is not useful in detecting lesions within the distal airways and the lung parenchyma. CT- Scan of thorax is helpful in detecting both endobronchial and parenchymal abnormalities but it does not allow microbial and histologic diagnosis[7]

RESEARCH QUESTION:
Whether F.O.B and CT thorax are helpful in reaching a diagnosis in cases of hemoptysis with normal chest x-ray.

HYPOTHESIS:
FOB AND CT thorax may or may not be useful in reaching to a diagnosis in patients of hemoptysis with normal chest x-ray

AIMS & OBJECTIVES
AIMS
1. To evaluate the diagnostic yield of FOB AND CT Thorax in patients of hemoptysis with normal chest x-ray
2. To correlate the FOB , CT thorax and clinical findings in patients of hemoptysis with normal chest x-ray.

OBJECTIVES
1. Clinical assessment of patient of hemoptysis with normal chest x-ray.
2. To study the role and diagnostic yield of fibre optic bronchoscopy in patients of hemoptysis with normal chest xray.
3. To study the role and diagnostic yield of ct thorax in patients of hemoptysis with normal chest xray.
4. Comparative study of ct , fob and clinical findings in patients of hemoptysis with normal chest x-ray.

II. MATERIALS AND METHODS

STUDY DESIGN:Observational and cross sectional
STUDY AREA: All outdoor & indoor patients of age 18 years and above attending the Department of Respiratory Medicine of National Medical Science & Research, Jaipur Rajasthan presenting with hemoptysis with normal chest xray.
STUDY PERIOD:18 months
SAMPLE SIZE: 221 patients.
TIME FRAME: July 2020 to June 2022
SELECTION CRITERIA OF PATIENTS

Inclusion criteria:
1. Age 18 years and above
2. One or more episodes of hemoptysis and normal chest X-ray.
3. Normal bleeding time, clotting time and prothrombin time

4. Sputum for AFB smear– negative.
5. Willing to participate in the study and willing to give written informed consent.

Exclusion criteria:

1. Severelydyspnoeic patients.
2.Unstable cardiovascular status.
3.Persistent massive hemoptysis
4.Pregnancy.
5.Patients with diagnosed disease with hemoptysis as its manifestation
6. Uncooperative patients.
7. Immunosuppressed & HIV positive patients.
8.Patients with asthma and copd.

III. METHODOLOGY

All the study subjects will be further reassessed for detailed clinical history, full clinical examination and laboratory investigations as per performa enclosed.

Patients of Hemoptysis with normal chest xray would be further evaluated by CT thorax and FOB to reach to a particular diagnosis.

Technique of FOB:

Prior to the procedure informed consent will be taken after excluding the patients with contraindication to bronchoscopy .patient will be kept nill per orally for 4 to 6 hours prior to the procedure nebulization will be done with 2%xylocaine via nebulizer under all aseptic precautions and strict supervision bronchoscopy will be done under local anesthesia via fibre optic bronchoscope. After inspecting the bronchial tree bronchial lavage will be done with 20 ml of normal saline and sample will be sent for examination and if required histopathological samples will be taken and sent for examination. After the procedure patient will be kept under observation and will also be observed for pneumothorax,haemorrhage infection and cardiac arrhythmias for 24 to 48 hours, proper disinfection of bronchoscope in between will be mandatory.

FOB-fibre optic bronchoscopy

BL-bronchial lavage

Technique of CT Thorax:

Non contrast CT thorax both mediastinal and lung window.

REFERENCES

[1]. Rita Sood*, Sima Mukhopadhyaya Approach to a Patient with Haemoptysis andNormal Chest X-RayJIACM 2002; 3(1): 14-22 All India Institute of Medical Sciences,New Delhi-110 029.

[2]. Tenneti Poornima1,*, Monisha Silla[2], Uppaluri S. Anand Swaroop[3],'Role of CT scan chest and fiber optic bronchoscopy in evaluating patients with hemoptysis and normal chest radiograph' DOI: 10.18231/2456-012X.2017.001.6

[3]. Arun B. J.1, Mohan J.1, Vijay Bhaskar2, Niranjan Nagaraj 'Role of fibre optic bronchoscopy in cases of bronchoscopic homoptysis with normal chest xray'pISSN 2349-3925; eISSN 2349-3933.

[4]. Amir Suleman, Qazi Ikramullah, Farooq Ahmed, M Yousaf Khan J Pulmon Resp Med.

[5]. Sharma Shubhkaran, Luhadia S.K., Gupta N.K. Geetanjali Medical College And Hospital,21/04/2014, Udaipur, Rajasthan , India.

[6]. Dr.Harjinder Singh, *Dr.Surinder Pal Singh, Dr,Satinder Pal Singh Government Medical College Patiala2018 www.iosrjournals.org.

[7]. V.K. Vijayan, C.N. Paramasivan and K. SankaranCardio-Pulmonary Medicine Unit Tuberculosis Research Centre, Indian Council of Medical Research, Chennai-600 031.

[8]. Bindu Cheriattil Govindan[1]'Additional yield in the diagnosis by use of fiber optic bronchoscopy and ctscan in evaluation of patients with haemoptysis having normal chest x-ray'.Department of Pulmonary Medicine, Government TD Medical College, Alappuzha, Kerala'

[9]. Agarwala A1, Basuthakur S2, Shamim S3, Saha K4, Bhattacharya S5, Sengupta A6 'Diagnostic Yield of Fiber Optic Bronchoscopy and CECT Thorax inPatients of Haemoptysis with Normal Chest X-Ray' ISSN 2321-127X.

[10]. Sarita Magu,Rajeev Malhotra,Krishan Bihari Gupta and Daya Shankar Mishra 'Role of computed tomography in patient with hemopptysis and a normal chest skiagram'Department of radiology and chest and tuberculosis,PtB.D.Sharma PGIMS,Rohtak,India 1185-7.

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CASE PERFORMA
Case no. **Reg No** **IPD No.**

1) Name:
2) Age/ Sex:
3) Religion:
4) Occupation:
5) Residence:
6) Chief complaints & duration:
7) Smoking status: Type
Current/Ex/Non smoker
Smoking Index

8) H/O present illness
(9) Past H/O:
10) Family H/O:

General Examination
Pulse rate:Respiratory rate: B.P. :
Pallor Icterus Clubbing Cyanosis Pedal
Oedema Lymphadenopathy
Weight Height Waist circumference
BMI
Respiratory examination:-

Other Systems:
CVS:-
CNS:-
GIT:-

Investigations:-
1. CXR (PA view)
2. CT THORAX
3. COMPLETE BLOOD PICTURE
a) HB%:-
b) TLC:-
c) DLC:- POLYMORPHS- LEUCOCYTE- MONOCYTE-
d) ESR
4. RANDOM BLOOD SUGAR- HIV status
5. LIVER FUNCTION TEST-
a) TOTAL BILIRUBIN:-
b) SGOT:-
c) SGPT:-
d) ALKALINE PHOSPHATASE
6. RENAL FUNCTION TEST:-
a) BLOOD UREA
b) SERUM CREATININE
7. PULSE OXIMETRY AT ROOM AIR
8. ECG
9. Bronchoscopy:
a) Scopy findings
b) BAL FLUID : i) Z N stain
ii) CBNAAT
iii) Culture on L J media
10. SPUTUM FOR AFB culture on L J Media,culture and sensitivitys
11. BT,CT,PTT

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Participant Informed Consent Form(English)
Protocol/Studynumber:_____
Participant identification number for this trial: _____
Title of Project: _____ Name of the Principal Investigator: _____
Tel. No. (s). _____

The contents of the information sheet dated that was provided have been read carefully by me/ explained in detail to me, in a language that I comprehend, and I have fully understood the contents. I confirm that I have had the opportunity to ask questions.

The nature and purpose of the study and its potential risks/ benefits and expected duration of the study, and other relevant details of the study have been explained to me in detail. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal right being affected.

I understand that the information collected about me from my participation in this research and sections of any of my medical notes may be looked at by responsible individuals from NIMS. I give permission for these individuals to have access to my records.

I agree to take part in the above study.

---------- (Signatures /Left Thumb Impression) Date :
Place :

Name of the Participant: _____ Son/Daughter/Spouse of: _____ Complete postal address: _____

This is to certify that the above consent has been obtained in my presence.

---------- (Signatures of the Principal Investigator)Date:
Place:

1) Witness 2) Witness

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SignaturesSignatures

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सहभागी सूचित सहमति प्रपत्र

इस जांच के लिए सहभागी पहचान नम्बर----------

अनुसन्धान

शीर्षक----------

मुख्य अन्वेषक का नाम ---------- फ़ोन नंबर:

मैंने दिनांक ---------- के सूचना पत्र में दिये गए सभी तथ्यो का पड़ लिया हैं। मुझे समझ आने वाली भाषा मैं विस्तारपूर्वक बता दिया हैं और मैंने तथ्यो को भली भांति समझ लिया हैं। मैं पुष्टि करता हूँ कि मुझे प्रशन पुछने का अवसर दिया गया हैं।

मुझे अध्ययन की प्रकृति, उद्देश्य और इसके सम्भावित लाभ/जोखिमों और अध्ययन की सम्भावित अवधि अन्य प्रासंगिक जानकारी के बारे में विस्तार पूर्वक समझा दिया गया हैं। मैं समझता हूँ कि इस अध्ययन में मेरी भागिधारी स्वेछिक हैं और इस अध्ययन से किसी भी समय बिना कोई कारण बताए, बिना मेरी चिकित्सा देखभाल या कानूनी अधिकारों के प्रभावित हुए अपना नाम वापिस ले सकता/सकती हूँ।

मैं समझता हूँ कि इस अनुसन्धान में मेरी सहभागिता से मेरे बारे में एकत्र जानकारी और चिकित्सीय नोटों को निम्स अस्पताल के जिम्मेदार लोगों द्वारा देखा जावेगा। मैं इन व्यक्तियों को अपने रिकार्ड देखने कि अनुमति प्रदान करता/करती हूँ।

मैं उपर्युक्त अध्ययन में भाग लेने के लिए अपनी सहमति प्रदान करता/करती हूँ।

सहभागी के हस्ताक्षर / बाएं अंगूठे का निशान दिनांक स्थान

सहभागी का नाम

पिता/पति का नाम

पूरा पता

यह प्रमाणित किया जाता है कि उपर्युक्त सहमति मेरी उपस्थिति में ली गई हैं।

मुख्य अन्वेषक के हस्ताक्षर दिनांक स्थान

1) गवाह के हस्ताक्षर 2) गवाह के हस्ताक्षर

नाम नाम

पता पता

इसकी तीन प्रतिलिपीयाँ बनाईये- (1) मरीज़ (2) अनुवेश्क (3) इन्सट्टिच्युश्नल ऐथीकल कमेटी

Participant Information Sheet (PIS)

1. What is the background to and purpose of the study?

To find out the diagnostic yield of bronchoalveolar fluid in clinicoradiologically suspected sputum smear negative cases of pulmonary tuberculosis

2. Do I have to take part?

Yes, for history taking, physical examination & investigations.

3. What will happen to me if I take part?

You will be examined medically & investigated.

4. What do I have to do?

Take part in your examination & investigations.

5. What are the possible side effects, risks and discomforts of taking part?

Some of the known side effects associated with fibre optic bronchoscopy include bleeding,infection,myocardial infarction,pneumothorax,haemorrhage,cardiac arrhythmia and lung collapse if airway is injured during the procedure.

6. What are the possible benefits of taking part?

Health check-up / Diagnosis of Diseases.

7. What if new information becomes available?

It will be published as Scientific Research.

8. What are the costs of taking part?

NIL.

9. How will my personal data be used?

Only for Scientific Publications.

10. Will there be provision for free treatment for research related injury?

NO.

11. Will compensation be paid to the subjects if disability or death results from such injury?

NO.

12. Whom should I contact if I need more information or help?

Dr.P. R. GUPTA (9414071748)
Dr. KUNAL VAGHELA (9106430444)