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Pulmonary Medicine

DIAGNOSTIC YIELD OF THORACOSCOPY IN MODERATE TO MASSIVE PLEURALEFFUSIONS

Dr. Sake Nagarajugari Rekha Nandhaki — Postgraduate, Department of Pulmonary Medicine, Alluri Sitaramaraju Raju Academy of Medical Sciences. Eluru, Andhra Pradesh 534005

Dr. P. Madhu Harsha* — Postgraduate, Department of Pulmonary Medicine, Alluri Sitaramaraju Raju Academy of Medical Sciences. Eluru, Andhra Pradesh 534005 *Corresponding Author

Dr. B. Neeharika — Assistant Professor, Department of Pulmonary Medicine, Alluri Sitaramaraju Raju Academy of Medical Sciences. Eluru, Andhra Pradesh 534005.

ABSTRACT

INTRODUCTION: Worldwide, approximately a million patients develop pleural effusion annually. The accurate diagnosis of pleural diseases is a challenging task. Medical thoracoscopy also known as pleuroscopy today remains the gold standard technique for diagnosing and managing undiagnosed pleural effusion cases because of its high sensitivity in malignant and tubercular pleural effusions.

MATERIALS & METHODS: It is a prospective descriptive study of 40 patients with pleural effusions. Complete patient history, physical examination, laboratory investigations , medical thorascopy were done to find out etiology of pleural effusions.

RESULTS: The mean age of distribution of undiagnosed pleural effusion in the present study was 47.57 ±16.04 years with male preponderance. In present study 38 out of 40 patents were definitively diagnosed. Diagnostic yield of thoracoscopic pleural biopsy was 95%.

CONCLUSION: Medical thoracoscopy is a safe and effective tool for diagnosis in patients with undiagnosed pleural effusion with high diagnostic yield and low complication rate.

KEYWORDS : Medical thoracoscopy, Pleural effusions,Tuberculosis, Malignancy

INTRODUCTION:

Diagnosis of pleural effusion usually begins with detailed history taking, physical examination and chest radiography. Pleural fluid aspiration and its microbiological, biochemical and cytological analysis is the initial investigation of choice to determine the etiology of pleural effusion. 25-40% of pleural effusions remain undiagnosed even after thoracocentesis and closed pleural biopsy. Thus, the accurate diagnosis of pleural diseases is a challenging task. Almost 50% of these undiagnosed patients will ultimately be diagnosed with a malignancy [2].Medical thoracoscopy also known as pleuroscopy today remains the gold standard technique for diagnosing and managing undiagnosed pleural effusion cases because of its high sensitivity in malignant and tubercular pleural effusions.

MATERIALS & METHODS:

This study is a hospital-based, prospective DESCRIPTIVE study conducted at Alluri sitaramaraju institute of medical sciences over two years.

Study population – 40 patients with undiagnosed pleural effusions.

INCLUSION CRITERIA:

- Age 18 -70 years including both male & female
- Undiagnosed pleural effusion, which meet the following criteria
- Pleural fluid must be
- Exudative pleural effusion as per Light's criteria
- Lymphocyte predominant
- ADA levels must be less than 45 IU/L
- Cytology must be negative for malignancy
- No known underlying lung pathology causing pleural effusion like
- pulmonary
- tuberculosis or malignancy.
- Patients willing to give consent for thoracoscopy
- Surgically fit

EXCLUSION CRITERIA:

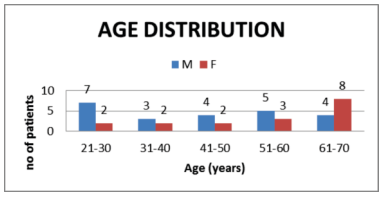
- Age less than 18 years or more than 70 years
- Diagnosed pleural effusion including following pleural fluid analysis
- Transudative pleural effusion as per Light's criteria
- Neutrophil predominant exudative pleural effusion as per Light's criteria
- Pleural fluid ADA levels more than 70 IU/L
- Pleural fluid cytology positive for malignancy
- Smear positive pulmonary tuberculosis

METHODOLOGY :

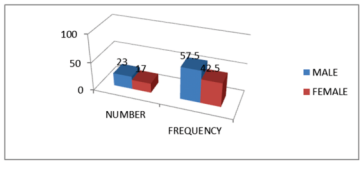
All the patients were subjected to detailed clinical history, Routine blood investigations, Radiological examination, Diagnostic thoracocentesis, Thoracoscopic examination of the pleural space using a fiber optic Thoracoscope.

RESULTS:

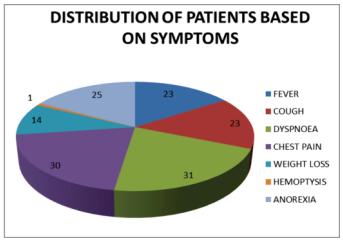
1.AGE DISTRIBUTION OF PATIENTS: The age of the patients ranged from 20-70.years. The mean age was 47.575 years. The median age was 50 years.



2. GENDER DISTRIBUTION OF PATIENTS: Out of 40 patients 23 (57.5%) were males and 17 (42.5%) were females.

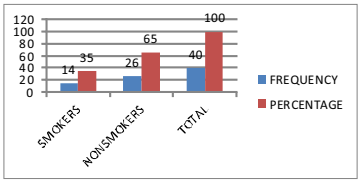


3. DISTRIBUTION OF PATIENTS BASED ON SYMPTOMS

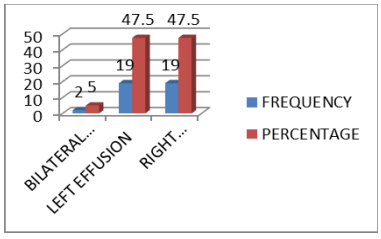


4. SMOKING STATUS: Out of 40 patients 14 (35%) were smokers,

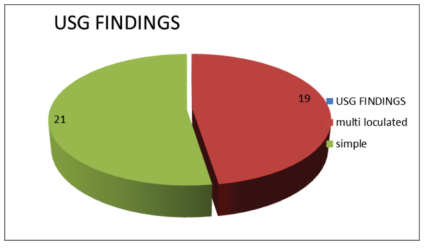
of which 12 of them are men and 2 are women. 26 (65%) patients were nonsmokers ,of them 13 were men 13 were women(50%).



5. CHEST X-RAY FINDINGS: Out of 40 patients, 19 patients (47.5%) had Right sided pleural effusion where 19 patients (47.5%) had left sided pleural effusion. 2 patients (5%) had bilateral pleural effusion.

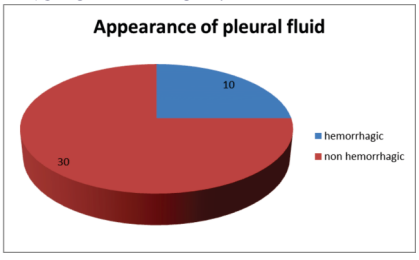


6. DISTRIBUTION OF PATIENTS BY USG CHEST FINDINGS:



7. QUANTIFICATION OF FLUID: out of 40 patients, 10 patients (25%) had pleural effusion with more than 1000 ml fluid, 30 patients (75%) had pleural effusion between 500-1000 ml fluid .as quantified using transthoracic ultrasound.

8.DISTRIBUTION OF PATIENTS ON BASIS OF GROSS APPEARANCE OF THE FLUID:



9.DISTRIBUTION OF PATIENTS ACCORDING TO THORA COSCOPIC FINDINGS:

GROSS FINDINGS	NUMBER	PERCENTAGE
DIFFUSE PL.THICK	20	50
POLYPOIDAL GROWTH	6	15
MULTLIPLE SEPTATIONS	21	52.5
SAGOGRAINS APPEARANCE	15	37.5
MULTI.VARIABLE.NODULES	14	33.3
NORMAL PLEURA	0	0

10. DISTRIBUTION OF PATIENTS ACCORDING TO HISTO PATHOLOGICAL REPORT:

CHRONIC.NON.SPECIFIC PLEURISY	13	32.5
NON SMALL CELL ADENOCARCINOMA	10	25
NON SMALL CELL SQUAMOUS CARCINOMA	1	2.5
TUBERCULOSIS	14	35
INCONCLUSIVE	2	5

In this study out of total 40 patients Total 38 (95%) patients were diagnosed definitively based the report on pleural biopsy histopathological examination.

Tuberculosis was the most common diagnosis in 14 patients (35%) followed by Non specific pleurisy. 13 patients (32.5%) had chronic non-specific pleurisy ,This is followed by malignancy. Among them 10 patients (25%) showed Non-small cell adenocarcinoma, 1 patient (2.5%) had Non-small squamous cell carcinoma. 2 patients (5%) could not be diagnosed even after thoracoscopic procedure biopsy

11. DIAGNOSTIC YIELD OF THORACOSCOPY: In the present study 38 out of 40 patients were diagnosed. Diagnostic yield of thoracoscopic pleural biopsy was 95%.

12. DURATION OF ICD DRAINAGE: Majority of patients required ICD drainage for less than a week.

13. POST THORACOSCOPIC COMPLICATIONS: In the present study, few patients had post thoracoscopic complications like prolonged air leak in 3 patients, post-operative pain is seen in 5 patients, subcutaneous emphysema was seen in 3 patients no complications were seen in 29 patients. It shows that it's a relative safe procedure without major complications.

14. COMPARISON OF THORACOSCOPIC GROSS FINDINGS AND DIAGNOSIS: Mass or polypoidal growth seen in 6 patients and the finding was seen consistent with malignancy.

Diffuse pleural thickening was seen in 6 malignant patients and 14 nonmalignant patients.

Multiple septations were seen in both 7 patients with malignancy and 14 patients who were diagnosed as non-malignant. Out of Nonmalignant patients 7 of them were diagnosed as tuberculosis and 7 of them as chronic nonspecific pleurisy.

Sago grains appearance was seen in 15 patients consistent with non-malignancy.

11 of them were diagnosed as tuberculosis and 4 patients as chronic nonspecific pleurisy.

Multiple variable sized nodules were seen in 7 patients diagnosed as malignancy, 7 as non-malignancy. Of which 1 was diagnosed as tuberculosis and 6 as chronic nonspecific pleurisy. Normal pleura was not seen in any of our patients.

DISCUSSION:

Patients with pleural effusions are commonly seen in the pulmonary practice and can be caused by benign or malignant etiologies [51]. In areas of high incidence of TB, the commonest causes of pleural effusion include - TB , malignancy, congestive heart failure and pneumonia . While dealing with patients with pleural effusion, initial approach include clinical history, physical examination followed by chest radiography and pleural fluid analysis for microbiology, biochemistry and cytology. If findings of pleural fluid analysis are inconclusive, an additional procedure is required to obtain pleural biopsy for histopathological diagnosis. [51]. 25-40% of pleural effusions remain undiagnosed even after thoracocentesis and CPB [44]. The relatively low yield of closed pleural biopsy is due to several factors, including minimal and non-uniform pleural involvement in early disease, especially diaphragmatic and visceral pleura. These limitations can be overcome by semirigid thoracoscopy because the biopsy is taken directly under vision [42]. Medical thoracoscopy also known as pleuroscopy is a safe and valuable tool for diagnosis of pleural effusion of unexplained origin because it allows obtaining pleural biopsy under direct vision

Diagnostic yield of thoracoscopy:

The diagnostic yield of the present study is 95%

That is comparable to study of Sawarkar et al (95.5%) Sachin p.dole et al(95%) Narsimhan et al (97%) Rozaman et al (97%) Diagnostic yield of Thoracoscopy is low in Helela et al (88.33%) Diagnostic yield of Thoracoscopy is 74.5% in V.K.Mootha et al ,67.7% in study by Mohan et al. The yield is less in study done by Pahang et al 54.54%. .this low yield in Pahang study may be because of very small sample size.

Most of the studies the thoracoscopic yield is comparable and very good yield is possible with semi rigid Thoracoscopy.

CONCLUSION:

A Prospective descriptive study of 40 patients with pleural effusion

was done. The mean age was 47.575 years. 57.5% were males and 42.5% females. Tuberculosis was the most common diagnosis 14 patients (35%) were diagnosed TB followed by Nonspecific pleurisy. 13 patients (32.5%) had chronic non-specific pleurisy, this is followed by malignancy. Among them 10 patients (25%) showed Non-small cell adenocarcinoma, 1 patient (2.5%) had Non-small squamous cell carcinoma. 2 patients (5%) could not be diagnosed even with thoracoscopic histopathology. 38 out of 40 patients were definitively diagnosed. Diagnostic yield of thoracoscopic pleural biopsy was 95%. Medical Thoracoscopy is a safe and effective tool for diagnosis in patients with undiagnosed pleural effusion with high diagnostic yield and low complication rate.

RECOMMENDATIONS

1. Medical Thoracoscopy should be performed as early as possible in all patients with undiagnosed pleural effusion if initial pleural fluid reports were inconclusive.
2. Medical thoracoscopy with semirigid thoracoscope has made the procedure more convenient to use as a routine diagnostic procedure
3. Medical thoracoscopy is safe method with high diagnostic yield, low complication rate.
4. It is very easy to learn in those who handle bronchoscope routinely.
5. Single port medical thoracoscopy thus is sufficient for diagnostic purpose in all pleural effusion with indeterminate etiology.

REFERENCES:

1. San Jose ME, Alvarez D, Valdes L, Sarandeses A, Valle JM, et al. Utility of tumour markers in the diagnosis of neoplastic pleural effusion. Clin Chim Acta. 1997; 265: 193-205.
2. Jiménez D, Pérez-Rodriguez E, Diaz G, Fogue L, Light RW. Determining the optimal number of specimens to obtain with needle biopsy of the pleura. Respir Med. 2002; 96: 14-17.
3. McGrath EE, Anderson PB. Diagnosis of pleural effusion: a systematic approach. Am J Crit Care. 2011; 20: 119-127.
4. Haridas N, Suraj KP, Rajagopal TP, James PT, Chetambath R. Medical Thoracoscopy vs Closed Pleural Biopsy in Pleural Effusions: A Randomized Controlled Study. J Clin Diagn Res. 2014; 8: MC01-MC04.
5. Sachin s dole, Gauri P Godbole, Himanshu S Pophale,to study efficacy of medical Thoracoscopy in undiagnosed pleural effusions.Journal of association of physicians of India, volume 64 2016
6. Michaud G, Berkowitz DM, Ernst A. Pleuroscopy for diagnosis and therapy for pleural effusions. Chest. 2010; 138: 1242-1246.
7. Prabhu VG, Narasimhan R. The role of pleuroscopy in undiagnosed exudative pleural effusion. Lung India. 2012; 29: 128-130.
8. Yan-Bing Wu†, Li-Li Xu†, Huan-Zhong Shi* Diagnostic value of medical Thoracoscopy in malignant pleural effusion. Wu et al. BMC Pulmonary Medicine (2017) 17:109.
9. Deepali Jain, Neha Kawatra Madan, Sudheer Arava. Utility of semi-rigid thoracoscopy in undiagnosed exudative pleural effusion.Lung India. 2015 Mar-Apr; 32(2): 119–126
10. Arda Kiani 1, Behrooz Farzanegan 1 Hamid Reza Jabardarjani 1, Diagnostic Yield of Medical Thoracoscopy in Undiagnosed Pleural Effusion. 2015 NRITLD, National Research Institute of Tuberculosis.