

ORIGINAL ARTICLE**Utility of thoracoscopy for the evaluation of pleural disease**

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ABSTRACT:

Background: Pleural fluid aspiration and its biochemical, microbiological, and cytological study is the first step in determining the aetiology of pleural effusion. The present study assessed utility of thoracoscopy for the evaluation of pleural disease. **Materials & Methods:** 58 cases who underwent thoracoscopy of both genders were recruited. In the bronchoscopy suite, a thoracoscopy was performed using an Olympus LTF-160 pleuravideoscope. **Results:** Out of 58 cases, 32 were males and 26 were females. Diagnosis was adenocarcinoma in 12, tuberculosis in 16, Hodgkin's lymphoma in 5, mesothelioma in 10 and inflammatory pseudotumour in 15 cases. Side was right in 30 and left in 28. Size of effusion was 1/3 hemithorax or less in 27, 2/3 hemithorax in 22 and massive in 9 cases. Complications were major in 5 and minor in 11. The difference was significant ($P < 0.05$). Overall diagnostic accuracy was 96%, sensitivity for malignancy was 97.5%, positive predictive value for malignancy was 100% and negative predictive value for malignancy was 94%. **Conclusion:** When pleural fluid cytology and blind pleural biopsy yield negative results, patients with pleural effusion need to be evaluated further by thoracoscopy because a sizable percentage of them may have a malignancy. In these cases, thoracoscopy with a semi-rigid thoracoscope yields an excellent diagnostic result.

Keywords: Pleural fluid aspiration, effusion, tuberculosis

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INTRODUCTION

Pleural fluid aspiration and its biochemical, microbiological, and cytological study is the first step in determining the aetiology of pleural effusion. In cases of malignant pleural effusions, the diagnostic yield of pleural fluid cytology is approximately 62%.¹ Using a cutting needle for a closed pleural biopsy raises the yield to 74%. Only a limited proportion of patients with tuberculous pleural effusion exhibit acid-fast bacilli (AFB) in their pleural fluid investigation². The preferred method of diagnosing pleural tuberculosis is still pleural biopsy.³ However, only 69% to 75% of tuberculous effusions may be diagnosed by blind pleural biopsy. 20% to 25% of pleural effusions in a pulmonologist's practice go undetected despite repeated thoracentesis and closed needle biopsy. As a result, there is increased interest in using medical thoracoscopy to diagnose pleural illnesses.⁴

Traditionally, stiff metallic devices have been used for thoracoscopy procedures.⁵ Thoracoscopy's full potential is not being utilized since there is a shortage of medical professionals who are qualified to use these tools.⁶ The Olympus LTF 160 Pleuravideoscope, a flex-rigid or semi-rigid video thoracoscope, was just released. Its advantage of being

easily maneuverable stems from its small design and partial flexibility. It also has the benefit of being compatible with the video-bronchoscope's light source and processor.^{7,8} The present study assessed utility of thoracoscopy for the evaluation of pleural disease.

MATERIALS & METHODS

The study was carried out 58 cases who underwent thoracoscopy of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. In the bronchoscopy suite, a thoracoscopy was performed using an Olympus LTF-160 pleuravideoscope. During this conscious sedation technique, the patient's breathing was spontaneous, resulting in partial or near total lung collapse. Pethidine 50 mg and promethazine 25 mg were injected intramuscularly into the patients ten minutes prior to the surgery as a premedication. Midazolam was titrated to the patient's comfort level intravenously during the surgery. Pulse oximetry was used to continually monitor oxygen saturation, and oxygen supplementation was given as needed. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 58		
Gender	Male	Female
Number	32	26

Table I shows that out of 58 cases, 32 were males and 26 were females.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Diagnosis	adenocarcinoma	12	0.86
	tuberculosis	16	
	Hodgkin’s lymphoma	5	
	mesothelioma	10	
	inflammatory pseudotumour	15	
Side	Right	30	0.94
	Left	28	
Size of effusion	1/3 hemithorax or less	27	0.05
	2/3 hemithorax	22	
	Massive	9	
Complications	Major	5	0.01
	Minor	11	

Table II, graph I shows that diagnosis was adenocarcinoma in 12, tuberculosis in 16, Hodgkin’s lymphoma in 5, mesothelioma in 10 and inflammatory pseudotumour in 15 cases. Side was right in 30 and left in 28. Size of effusion was 1/3 hemithorax or less in 27, 2/3 hemithorax in 22 and massive in 9 cases. Complications were major in 5 and minor in 11. The difference was significant ($P < 0.05$).

Graph I Assessment of parameters

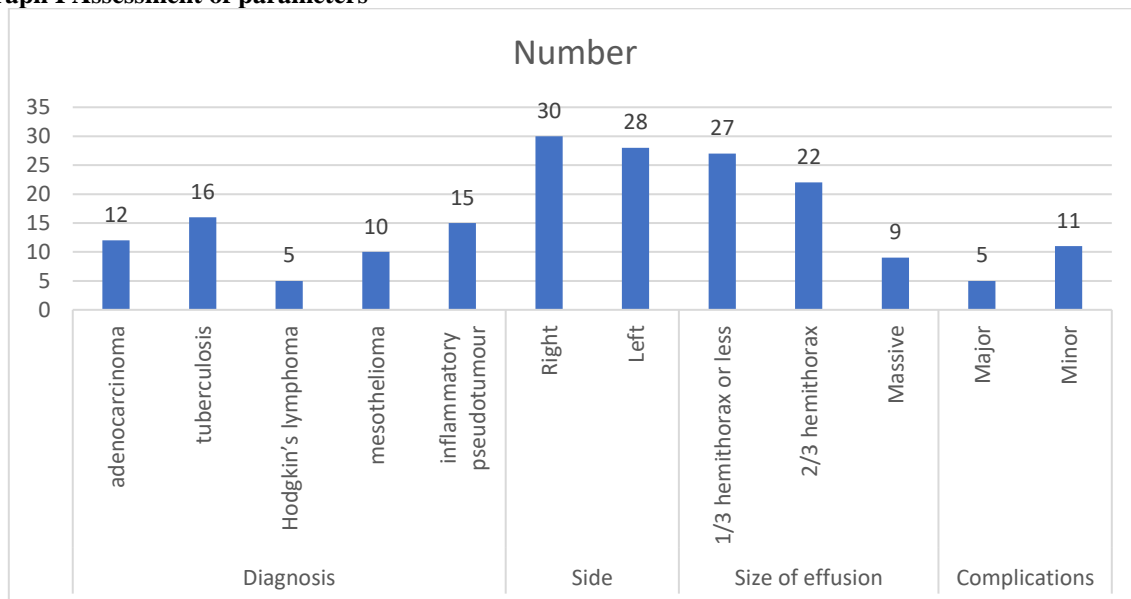


Table II Diagnosis efficiency

Diagnosis efficiency	Percentage
Overall diagnostic accuracy	96%
Sensitivity for malignancy	97.5%
Positive predictive value for malignancy	100%
Negative predictive value for malignancy	94%

Table III shows that overall diagnostic accuracy was 96%, sensitivity for malignancy was 97.5%, positive predictive value for malignancy was 100% and negative predictive value for malignancy was 94%.

DISCUSSION

For over a century, rigid thoracoscopy has shown to be an effective technique for diagnosing and treating

unilateral pleural effusion.^{9,10} When cytological analysis of the pleural fluid and/or closed needle biopsy of the pleura have failed to yield diagnostic

material, it is utilized to prevent surgical exploration of the pleural space.¹¹ Comparing the new, semirigid device to rigid thoracoscopy, the degree of evidence is still lower, despite phase II trials demonstrating the equipment's safety and precision.^{12,13} The present study assessed utility of thoracoscopy for the evaluation of pleural disease.

We found that out of 58 cases, 32 were males and 26 were females. Boutin C et al¹⁴ in their study compared the diagnostic value of thoracoscopic biopsy, fluid cytology, and Abrams needle biopsy. Thoracoscopy was performed using a rigid thoracoscope under local anesthesia with neuroleptanalgesia. A total of 10-20 biopsies were taken from the parietal, diaphragmatic, and visceral pleura. Tolerance to thoracoscopy was good. The only complications were subcutaneous emphysema (1 patient), local pleural infection (4 patients), hemorrhage of less than 100 ml (3 patients), and temperature of 38-38.5 degrees C (26 patients). In 137 patients, the cavity was free, and complete endoscopic inspection was achieved. In 51 patients, inspection was limited by adhesions that were severed to obtain biopsy. Nonspecific inflammation was observed in 12 patients (6.5%), nodules in 92 (49%), thickening in 21 (11%), and mixed lesions in 63 (33.5%). Diagnosis was achieved by thoracoscopy in 98% of patients, by fluid cytology in 26%, and by needle biopsy in 21%.

We found that diagnosis was adenocarcinoma in 12, tuberculosis in 16, Hodgkin's lymphoma in 5, mesothelioma in 10 and inflammatory pseudotumour in 15 cases. Side was right in 30 and left in 28. Size of effusion was 1/3 hemithorax or less in 27, 2/3 hemithorax in 22 and massive in 9 cases. Complications were major in 5 and minor in 11.

We found that overall diagnostic accuracy was 96%, sensitivity for malignancy was 97.5%, positive predictive value for malignancy was 100% and negative predictive value for malignancy was 94%. Thangakunam B et al¹⁵ did retrospective analysis of data of patients who underwent thoracoscopy for the evaluation of pleural disease. Thoracoscopy was done in 21 patients using a flex-rigid thoracoscope in our institution. The indication was pleural effusion with inconclusive or negative pleural fluid cytology and blind pleural biopsy in 18 of the 21 patients. Thoracoscopic biopsy was positive in 12 of the 18 patients (66.7%). Of the six who had a negative biopsy, the procedure indirectly helped in patient management in five. There were no significant procedure-related complications.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that when pleural fluid cytology and blind pleural biopsy yield negative results, patients with pleural effusion need to be evaluated further by thoracoscopy because a sizable percentage of them may have a malignancy. In these cases, thoracoscopy

with a semi-rigid thoracoscope yields an excellent diagnostic result.

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