

Assessment Of 120 Cases Of Pleural Effusion Underwent Medical Thoracoscopy

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ABSTRACT:

Background: The present study was conducted to determine 120 cases of pleural effusion underwent medical thoracoscopy.

Materials & Methods: 120 patients who underwent medical thoracoscopy in 79 Males and 41 females were recruited. Diagnostic pleural aspiration was done and the pleural fluid was analyzed for sugar, protein, Lactate dehydrogenase (LDH), Adenosine deaminase (ADA), gram-stain, Acid-fast bacilli (AFB) smear, culture, CBNAAT, and cytological analysis. Patients with unhelpful results of pleural fluid analysis (Light's criteria) underwent medical thoracoscopy and pleural biopsy.

Results: 98 (81.7%) had pleural effusion on (CE-CT) thorax as 6 (5%) had mass lesion on left side where 6 (5%) had lesion on right side, 10 (8.3%) had other findings like passive collapse, consolidation, atelectasis, mediastinal lymphadenopathy. 13 (10.8%) patients had edematous mucosa on FOB, 19 (15.85%) patients had external compression on FOB, whereas 77 (64.2%) had the normal study on bronchoscopy, whereas 11 (9.2%) had other findings like anthracotic patches. 38 (31.7%) had inflammation, sago grain like nodules, adhesions on thoracoscopy, 25 (20.8%) had inflammation and adhesions, 51 (42.5%) had inflammation with nodules/masses/plaques, 2 (1.7%) had necrotic/ulcerative/other lesions on thoracoscopy.

Conclusion: Medical diagnostic thoracoscopy should be considered in all patients having undiagnosed pleural effusion and fit for medical thoracoscopy.

Key words: Chest pain, Medical diagnostic thoracoscopy, Pleural effusion

1. INTRODUCTION

Recurrent and persistent pleural exudates are common in clinical practice, and in a large number of patients, thoracentesis and blind pleural biopsy procedures do not provide a definitive diagnosis.¹ In the Western world, the majority of these exudates are malignant. Thoracoscopy today remains the gold standard technique in providing diagnosis and management in these cases.² Pleural effusion of unknown origin remains the commonest indication of pleuroscopy and is considered to be one of the techniques with the highest diagnostic yield in “aspiration cytology negative exudative effusions” from the recent British Guidelines, with an efficacy almost comparable to videoassisted thoracoscopic surgery (VATS).³

Thoracoscopy is a minimally invasive procedure that allows visualization of the pleural space and intrathoracic structures. It enables the taking of pleural biopsies under direct vision, therapeutic drainage of effusions and pleurodesis in one sitting.⁴

Medical thoracoscopy helps to take pleural biopsy from suspicious sites under direct vision and allows greater diagnostic yield up to 95% for malignancies and 100% for benign diseases. Yield of thoracoscopic pleural biopsy is higher in patients with suspected pleural TB.⁵ A diagnosis of pleural TB could be achieved in 99% patients as against 51% patients using closed pleural biopsy.⁶ Diagnosis of malignant pleural effusion can be achieved in 95% of patients with thoracoscopy, which is higher than the 44% yield for closed thoracoscopy.⁷ The present study was conducted to determine 120 cases of pleural effusion underwent medical thoracoscopy.

2. MATERIALS & METHODS

The present study was conducted on 120 patients who underwent medical thoracoscopy in 79 Males and 41 females. Ethical approval for the study was obtained from institutional ethical committee. Inclusion criteria were age, more than 18 years, undiagnosed exudative pleural effusion and ADA 40 or less than 40. Exclusion criteria were severe chronic obstructive pulmonary disease, respiratory insufficiency, with hypoxemia and hypercapnia, transudative pleural effusion and known primary malignancy. Detailed history was taken, regarding socio-demographic factors, age, gender, smoking, previous history of anti-tubercular treatment, full clinical examination, routine chemical and hematological blood analysis including liver and renal, functions tests, complete blood count, coagulation profile, viral markers, plain chest X-ray (P–A and lateral view), USG Chest, CECT Chest, Bronchoscopy. Diagnostic pleural aspiration was done and the pleural fluid was analyzed for sugar, protein, Lactate dehydrogenase (LDH), Adenosine deaminase (ADA), gram-stain, Acid-fast bacilli (AFB) smear, culture, CBNAAT, and cytological analysis. Patients with unhelpful results of pleural fluid analysis (Light’s criteria) underwent medical thoracoscopy and pleural biopsy. Results were tabulated and statistically analyzed. P value less than 0.05 was considered significant.

3. RESULTS

Table I Distribution as per contrast-enhanced CT (CE-CT) findings

CT (CE-CT) findings	Males	Females	P value
Pleural effusion	64	34	0.993
Mass lesion left	4	2	
Right mass lesion	4	2	
Others	7	3	

Table I shows that 98 (81.7%) had pleural effusion on (CE-CT) thorax as 6 (5%) had mass lesion on left side where 6 (5%) had lesion on right side, 10 (8.3%) had other findings like passive collapse, consolidation, atelectasis, mediastinal lymphadenopathy.

Table II Mean comparison of the study subjects as per pleural fluid cytology

Variables	Minimum	Maximum	Mean	Std. Deviation
Counts	100.00	3100.00	952.75	781.97
Lymphocytes	22.00	99.00	80.58	15.31
Neutrophills	0.00	78.00	4.59	10.43
Monocytes	0.00	70.00	12.45	12.15
Eosinophills	0.00	25.00	0.83	3.66
Mesothelial cells	0.00	11.00	0.75	2.41
Protein	3.00	11.00	4.83	1.03
Albumin	1.00	6.00	2.59	0.72
Glucose	0.00	179.00	85.63	30.48
ADA	4.00	40.00	22.73	11.14
LDH	160.00	1250.00	435.12	217.05

Table II shows that the majority of patients had lymphocytic effusion, followed by, monocytic effusion, neutrophilic effusion, eosinophilic effusion. All the patients included had ADA<40, had exudative pleural effusion according to Light'criteria.

Table III Distribution as per fiber-optic bronchoscopy (FOB) findings

CT (CE-CT) findings	Males	Females	P value
Edematous mucosa	8	5	0.530
Ext compression	15	4	
Normal	48	29	
Others	8	3	

Table III shows that 13 (10.8%) patients had edematous mucosa on FOB, 19 (15.85%) patients had external compression on FOB, whereas 77 (64.2%) had the normal study on bronchoscopy, whereas 11 (9.2%) had other findings like anthracotic patches.

Table IV Distribution as per thoracoscopy findings

Thoracoscopy findings	Males	Females	P value
Inflammation+ sago grain nodules+ adhesions	24	14	0.190
Inflammation+ adhesions	17	8	
Inflammation with Nodules/masses/plaques	34	17	
Necrotic/ulcerative/other lesion	0	2	
Normal	4	0	

Table IV, graph I shows that 38 (31.7%) had inflammation, sago grain like nodules, adhesions on thoracoscopy, 25 (20.8%) had inflammation and adhesions, 51 (42.5%) had inflammation with nodules/masses/plaques, 2 (1.7%) had necrotic/ulcerative/other lesions on thoracoscopy.

Graph I Distribution as per Thoracoscopy findings

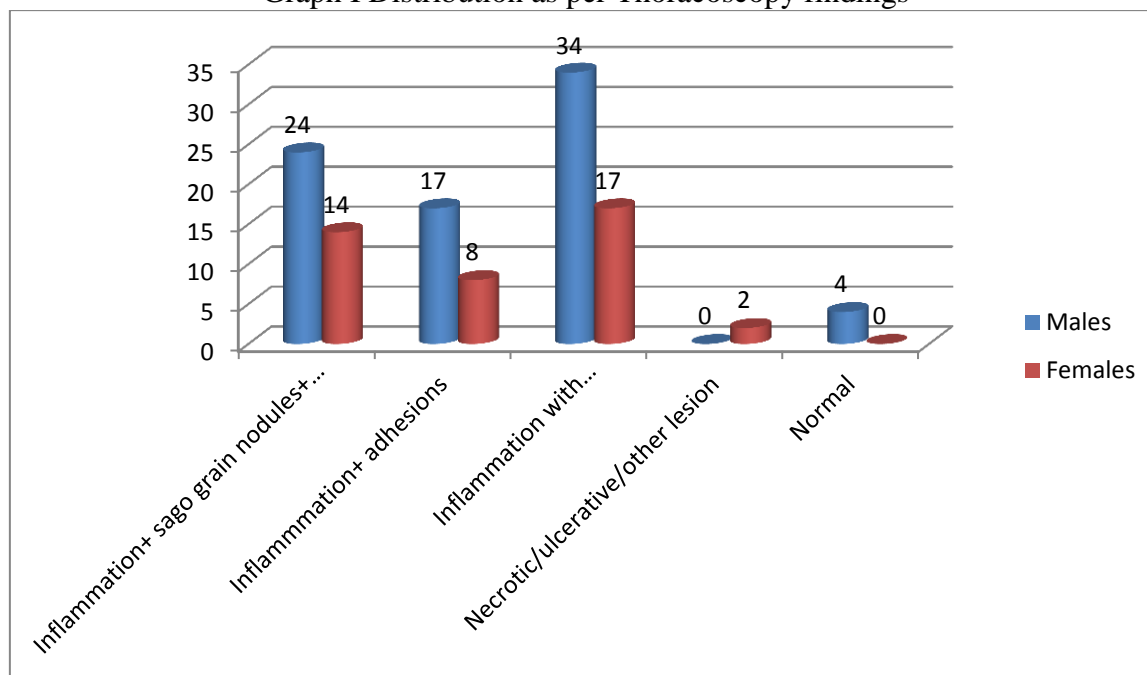


Table V Distribution as per pleural fluid drained

Pleural Fluid drained	Males	Females	P value
<500	14	12	0.191
>500	16	9	
>1000	32	9	
>1500ml	17	11	

Table V shows that 26 patients (21.7%) had post-procedural pleural fluid drained was 500 cc, in 25 (20.8%) fluid drained was between 500-100ml, in 41 (34.2%) fluid drained was between 1000-1500ml, in 28 (23.3%) fluid drained was more than 1500ml.

4. DISCUSSION

Medical thoracoscopy, in the trained hands of a pulmonologist is a safe, effective and minimally invasive procedure that can be performed under local anesthesia or conscious sedation in an endoscopy suite, unlike video assisted thoracoscopic surgery (VATS) which is performed under general anesthesia with single lung ventilation.⁸ It allows one to visualize the pleural space and intrathoracic structures and perform limited diagnostic and therapeutic procedures.⁹ Medical thoracoscopy can be used for therapeutic purposes like adhesiolysis, evacuation of pleural fluid in empyema patients, chemical pleurodesis in case of malignant pleural effusion and spontaneous pneumothorax.¹⁰ The present study was conducted to determine 120 cases of pleural effusion underwent medical thoracoscopy.

We found that 98 (81.7%) had pleural effusion on (CE-CT) thorax as 6 (5%) had mass lesion on left side where 6 (5%) had lesion on right side, 10 (8.3%) had other findings like passive collapse, consolidation, atelectasis, mediastinal lymphadenopathy. Grandhi et al¹¹ included 50 cases of pleural effusion. Thoracoscopic pleural biopsy was performed in all cases. The samples were sent for histopathology after the biopsy. The majority of the study subjects were found to be in the age group of 45-55 years i.e. 60%. Males outnumbered females as the pleural effusion may be more common in males above the age of 45 years than among the females. Tuberculosis was more in females (60%) than males (40%). But malignancy –

adenocarcinoma spreading to pleura was more common in males (90.5%) than females (9.5%). Only one female was found to have Meigs syndrome (ovarian tumor with secondaries pleura). Mesothelioma was seen in three cases and all of them were males. Normal histopathology finding was seen in five cases and all of them were males. It has been documented that pleural effusion due to tuberculosis was more common in females in the present study. This study concluded that thoracoscopic pleural biopsy diagnostic yield is high. Low ADA level in pleural fluid does not rule out Kochs, incidence more in females.

We found that majority of patients had lymphocytic effusion, followed by, monocytic effusion, neutrophilic effusion, eosinophilic effusion. All the patients included had ADA<40, had exudative pleural effusion according to Light' criteria. 13 (10.8%) patients had edematous mucosa on FOB, 19 (15.85%) patients had external compression on FOB, whereas 77 (64.2%) had the normal study on bronchoscopy, whereas 11 (9.2%) had other findings like anthracotic patches. Thomas et al¹² carried out a study on 407 patients who underwent diagnostic medical thoracoscopy for exudative pleural effusions. Tuberculosis was the most common etiology of exudative pleural effusions in Qatar accounting for 84.5% of all causes. Around 85% of patients were young males (mean age of 33 ± 12.1 years). The diagnostic yield of medical thoracoscopy for tuberculous pleural effusion was 91.4%. Malignant pleural effusions accounted for 5.2% of cases. Minor bleeding occurred in 1.2% of cases with no procedure-related mortality observed. This study concluded that medical thoracoscopy is a very safe procedure. Tuberculous pleuritis is by far the most common etiology of exudative pleural effusions in Qatar. Closed needle biopsy is a worthy consideration as an initial safe, easy and low-cost diagnostic modality for exudative pleural effusions in this country.

In present study, 38 (31.7%) had inflammation, sago grain like nodules, adhesions on thoracoscopy, 25 (20.8%) had inflammation and adhesions, 51 (42.5%) had inflammation with nodules/masses/plaques, 2 (1.7%) had necrotic/ulcerative/other lesions on thoracoscopy. 26 patients (21.7%) had post-procedural pleural fluid drained was 500 cc, in 25 (20.8%) fluid drained was between 500-100 ml, in 41 (34.2%) fluid drained was between 1000-1500ml, in 28 (23.3%) fluid drained was more than 1500ml.

The shortcoming of the study is small sample size.

5. CONCLUSION

Authors suggested that medical diagnostic thoracoscopy in local anesthesia is a simple, low-cost investigation with a relatively high diagnostic accuracy, no mortality and low morbidity and it should be considered in all patients having undiagnosed pleural effusion and fit for medical thoracoscopy.

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