ORIGINAL ARTICLE ASIAN JOURNAL OF MEDICAL SCIENCES

Scope of medical rigid thoracoscopy in patients with pleural effusion of unknown etiology: A prospective single center study

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Submission: 12-09-2022 Revision: 02-03-2023 Publication: 01-04-2023

ABSTRACT

Background: Pleural diseases commonly encountered are pleural effusion, pneumothorax, pleural wall thickening, and pleural mass. Medical thoracoscopy is a minimally invasive procedure that allows diagnostic and therapeutic intervention. The medical diagnostic thoracoscopy in local anesthesia is a simple, low-cost investigation with relatively high diagnostic accuracy, no mortality, and low morbidity. A diagnosis of pleural tuberculosis (TB) could be achieved in 99% of patients as against 51% using closed pleural biopsy. **Aims and Objectives:** Assessment of the role of medical rigid thoracoscopy in patients with pleural effusion of unknown etiology in a tertiary health care setup. The primary objectives of the study were to evaluate the diagnostic yield of medical thoracoscopy in pleural effusion of unknown etiology. **Materials and Methods:** The study duration/time frame to address the study: November 2017–February 2019 sample size with Justification Sample size: Minimum 31 patients. It was a prospective observational study. All patients admitted in hospital/daycare at LHRC presenting with pleural effusion with unknown etiology. All patients had a medical thoracoscopy, and samples were sent for microbiological and histological analysis. Clinical, thoracoscopic results and histopathological data of the patients were collected prospectively and analyzed. **Results:** In this study, 28 patients out of 31 patients were diagnosed. The diagnostic yield of thoracoscopic pleural biopsy was 90.3% Out of 31 patients, the most common complication found was chest pain 48.4% (15/31), followed by 09.7% (03/31) of the cases had complications such as surgical emphysema, postoperative fever, and bleeding. There were no complications in 32.2% (10/31) patients. **Conclusion:** Medical thoracoscopy is a noble procedure that helps the pulmonologist/surgeon to inspect the pleural cavity. It is a safe and effective diagnostic as well as a therapeutic tool with a high diagnostic yield. The most common differentials of undiagnosed pleural effusion cases are TB and malignancy.

Key words: Medical thoracoscopy; Pleural biopsy; Pleural effusion; Pleural mass; Pneumothorax

Access this article online

Website: http://nepjol.info/index.php/AJMS

DOI: 10.3126/ajms.v14i4.48316

E-ISSN: 2091-0576

P-ISSN: 2467-9100

INTRODUCTION

Pleural diseases commonly encountered are pleural effusion, pneumothorax, pleural wall thickening, and pleural mass. Worldwide, approximately a million patients develop pleural effusion annually.[1] Pleural effusion is a common clinical problem with various etiologies for around 4% patients in pulmonary practice.[2] Symptoms and signs may be specific to the respiratory system, or nonspecific. Dyspnea is a major, though nonspecific, respiratory symptom accompanying pleural effusion which commonly worsens progressively.[3,4] Hemoptysis may also help in the diagnosis of associated endotracheal and/or endobronchial lesions[5,6] or pulmonary embolism. Blind pleural biopsies

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may help in additional cases but complications such as bleeding and pneumothorax are common. Inconclusive diagnosis even after these two procedures is seen in 25–40% of effusions.[7,8] Medical thoracoscopy also known as pleuroscopy allows diagnostic and therapeutic intervention. It is a minimally invasive procedure and safe in trained hands of surgeons/pulmonologists. It involves passage of endoscope through the chest wall done under local anesthesia and/or conscious sedation in an endoscopy suite room even as a day care procedure. It allows visualization/inspection of the pleural space and intra-thoracic structures, diagnostic purpose (undiagnosed pleural effusion) enabling to take pleural biopsies under direct vision, therapeutic drainage of effusions, adhesiolysis and subsequently can perform talc/chemicalpleurodesis[9] ("poudrage") to prevent recurrence of persistent pleural effusions or pneumothorax in one sitting.[10] At the completion of thoracoscopic procedure an inter-costal drain is inserted for removal of air and fluid. If thoracoscopy is done for pleurodesis, the tube is left in place until the fluid drainage is significantly less. Most commonly used method of diagnostic medical thoracoscopy is the single puncture technique but on occasional circumstances, one more port may be made for taking biopsies.[11] 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.[12] Yield of thoracoscopic pleural biopsy is higher in patients with suspected pleural tuberculosis (TB). A diagnosis of pleural TB could be achieved in 99% patients as against 51% patients using closed pleural biopsy. Diagnosis of malignant pleural effusion can be achieved in 95% of patients with thoracoscopy, which is higher than the 44% yield for closed thoracoscopy.[13] Medical thoracoscopy is recommended for the patient with an undiagnosed pleural effusion particularly those with lymphocytic exudative picture where TB and malignant pleural effusion are possibilities with less invasive methods of diagnosis, that is, inconclusive initial pleural fluid analysis and in whom at least one pleural fluid cytology and one pleural fluid marker for TB (adenosine deaminase) have been negative. Prevalence of TB has been a concern warranting early diagnosis and treatment. The medical diagnostic thoracoscopy in local anesthesia is a simple, low-cost investigation with a relatively high diagnostic accuracy, no mortality, and a low morbidity.

Aims and objectives

Aim

The assessment of role of medical thoracoscopy in patients with pleural effusion of unknown etiology in a tertiary health-care set up.

Primary objectives

The primary objectives of the study were to evaluate diagnostic yield of medical thoracoscopy in pleural effusion of unknown etiology.

Secondary objectives

The following secondary objectives are as follows:

1. To observe the correlation in gross thoracoscopic findings and pleural biopsy reports among patients with pleural effusion of unknown etiology
2. To review adverse events and to evaluate safety of thoracoscopy in patients with pleural diseases.

MATERIALS AND METHODS

Study site

Lilavati Hospital and Research Centre, Mumbai.

Study population

All patients admitted in hospital/day-care at LHRC presenting with pleural effusion of unknown etiology.

Study design

Prospective observational study.

Study duration/time frame to address the study

The study duration was from November 2017 to –February 2019.

Sample size with Justification

Sample size: Minimum 30 patients

Sample size was calculated using SAS 9.2 package.

Estimates used for sample size calculation.

Efficacy variable

Prevalence of multiple nodules H0: Prevalence of multiple nodules = 40.0%,[14] H1: Anticipated Prevalence = 62%"; Power = 90%, Alpha = 0.05.

Statistical test used

Fisher Z-test for Binomial Proportion

Sample size calculated = 31[14]

A total of 31 cases of undiagnosed pleural effusion after thoracocentesis were enrolled in the study after fulfilling inclusion criteria and taking written informed consent.

Inclusion and exclusion criteria

Inclusion criteria for the study

a. All patients >18 years of age with unilateral/bilateral undiagnosed (inconclusive thoracocentesis) pleural effusion where medical thoracoscopy is indicated
b. Exudative, lymphocytic pleural effusion
c. Massive to moderate pleural effusion on high-resolution computed tomography (HRCT)

Exclusion criteria

a. Mild effusion on HRCT thorax
b. Patients with inaccessible pleural space obliterated by fibrous tissue or those suspected of having multi-loculated effusions
c. Patients with very thickened pleura demonstrated on HRCT thorax
d. Pregnancy
e. Patients with transudative pleural effusion
f. Patient not fit for performing thoracoscopy
g. Patient with severe uncorrected hypoxemia despite continuous oxygen administration
h. Patient who could not withstand lateral decubitus for a period long enough to perform thoracoscopy
i. Patient with unstable cardiovascular or hemodynamic status
j. Patient with coagulation defect and platelet count $<60,000/mm^3$.

Methodology

We took written informed consent before procedure. Demographic data and a comprehensive history related to Pleural effusion were obtained with the help of structured pro forma. All patients underwent medical thoracoscopy, followed by which thoracoscopic gross findings were noted, samples were sent for microbiological and histopathological examination. Clinical, thoracoscopic findings and histopathological data of the patients were collected prospectively and analyzed. Patients were subjected to the treatment based on the diagnosis.

Equipment for procedure

A rigid thoracoscope of Karl Storz

The following instrument set is required for thoracoscopy:

- Rigid thoracoscope (6-mm diameter)
- Biopsy forceps
- Suction tube
- Dissecting electrode
- Tissue forceps
- Blunt scissors
- Suture material
- Needle holder

Procedure

Medical thoracoscopy procedure was performed by a trained Surgeon or Pulmonologist under local anesthesia as per the recommendation of American College of Chest Physicians[15] For conscious sedation, a combination of intravenous morphine or fentanyl, plus midazolam for analgesia, sedation and amnesia was used. After adequate sedation, patient was positioned in lateral decubitus with the hemithorax up, padded comfortably, and secured to the table. The site for thoracoscope entry into the pleural space is determined by surface anatomy landmarks, the fourth or fifth intercostal space in the mid-axillary line, within the safe triangle. Standard sterile skin preparation and draping to create an adequate field was performed. Skin was then anesthetized with local infiltration, that is, 2% lidocaine. Before the thoracoscope was introduced, an artificial pneumothorax of several hundred cubic centimeter of air was usually induced.[16] After ensuring adequate sedation, the hemithorax was entered bluntly with a clamp passed over the rib and through the pleura. With an adequate access space created, the pleural space immediately subjacent to the entry site is digitally inspected to ensure an adequate pleural space (freedom from pleural adhesions) to safely insert the thoracoscope. Medical thoracoscope was then inserted under direct vision into the pleural space with single puncture technique. Once the surveillance panoramic examination is completed, the additional purpose of the procedure (e.g., evacuation of pleural fluid, pleural biopsy, or pleurodesis) was addressed. Pleural fluid was evacuated using suction catheters passed through the working channel under direct vision. Parietal pleural biopsy was performed with biopsy forceps passed through the working channel under direct vision. Once the examination and procedure were completed, the thoracoscope was withdrawn, a chest drain was placed, and the pneumothorax was evacuated.

Data collection methods

Clearance from the Research Advisory Committee and Institutional Ethics Committee was taken for the study. Clinical and thoracoscopic, microbiological, and histopathological data were collected from the hospital inpatient departmeIPD/Day care. Statistical analysis has been done after collection of data with the help of statistician. Personal and clinical details of patients were kept confidential.

Statistical methods

Data were analyzed using Statistical Package for the Social Sciences, Version 15.0 package. Data were given as Mean and SD for quantitative variables and Number (Percentage %) for qualitative variables. Student's unpaired t-tests were used to compare means between two groups for normal data. Chi-square tests were applied to compare percentages of more than 2 groups and Fisher Exact Probability tests were applied to compare percentages between two groups. Sensitivity, Specificity, Positive Likelihood Ratio, Negative Likelihood Ratio, Positive Predictive value, Negative Predictive value, and Accuracy with 95% Confidence Intervals were calculated by taking Histopathology as gold standard for Pleural fluid (Test 1) and Pleura App (Test 2). All tests were two tailed. Level of Significance was taken as $P \leq 0.05$. S: Significant, NS: Not significant, P: Probability value, and DF: Degrees of freedom.

RESULTS

A total of 31 patients who met the inclusion criteria were screened and included in the study. In the present study, age of patients ranged from 18 to 76 years. The mean age was 50.27 years. The median age was 52 years. The youngest patient's age was 19 years and the oldest patient's age was 76 years. The maximum numbers of patients were from the age group of 50–70 years. As per above data, 32.3% (10/31) of the cases were of age group between 50 and 70 years followed by 25.85% (08/31) of the cases were of age group between 18 and 30 years (Table 1). In this study, out of 31 patients, 41.9% (13/31) patients had straw nature of pleural effusion, followed by 35.5% (11/31) of the cases had hemorrhagic nature of pleural effusion. About 19.35% (06/31) patients had yellow and 03.2% (01/31) patient had milky appearance of pleural effusion. Out of 31 patients, 90.3% (28/31) patients had abnormal thoracoscopic findings. This study indicated that 61.3% (19/31) of the cases had nodules followed by 25.8% (08/31) with sago-grain appearance. About 9.7% (03/31) patients had normal pleura. About 3.2% (01/31) patient had mass as a finding on pleural space inspection.

In our study, out of 31 patients, 51.6% (16/31) of the cases had TB whereas 35.5%(11/31) of the cases had malignancy, 6.4% (02/31) patients had non-specific inflammation, 3.2% (01/31) patients had acute necrotizing inflammation, and 03.2% (01/31) had endometriosis (Table 2).

In the present study, out of 31 patients, 51.6% (16/31) of the cases had TB whereas35.5% (11/31) of the cases had malignancy, 6.4% (02/31) patients had non-specific inflammation, and 3.2% (01/31) patients had acute necrotizing inflammation and 03.2% (01/31) had endometriosis. Of all the TB patients, 62.5% (10/16) were drug sensitive and 37.5% (06/16) were drug resistant TB. As a whole, 32.3% (10/31) and 19.4% (06/31) of the cases were diagnosed with drug sensitive and drug resistant TB, respectively. Among patients diagnosed with malignancy, 63.6% (7/11) were found to have adenocarcinoma and 36.3% (04/11) had mesothelioma. Overall, 22.6% (07/31) and 12.9% (04/31) of the cases were diagnosed with adenocarcinoma and mesothelioma, respectively (Table 3).

In our study, out of 31 patients, 52.4% (11/31) of the cases with nodules had malignancy followed by 25% (07/31), 28.6% (08/31), and 35.7% (10/31) of the cases having sago-grain, nodules, and adhesions, respectively, had TB. Adhesions were found with either nodules in 57.8% (11/19) or sago-grain appearance in 31.5% (06/19) or with normal appearing pleura in 10.5% (2/19) as the only finding. In addition, pleural thickening as an associated finding was found in 12.9% (4/31) patients. Mostly pleural thickening was associated with nodules in 75% (03/04) and was the only finding with normally appearing pleura in 25% (01/04) (Table 4).

Out of 31 patients, most common complication found was chest pain 48.4% (15/31), followed by 09.7% (03/31) of the cases had complications such as surgical emphysema, post-operative fever and bleeding. There was no complication in 32.2% (10/31) patients (Table 5).

Table 1: Demographic characteristics of study population

Age (years)	Number of patients	Percentage
18–30	08	25.8
31–50	07	22.6
50–70	10	32.3
>71	06	19.4
Total	31	100
Mean±SD	50.27±9.67	
Gender		
Male	17	54.8
Female	14	45.2
Total	31	100
History of smoking		
Ex-smoker	03	09.7
Non-smoker	21	67.7
Smoker	07	22.6
Total	31	100
Comorbid condition		
Diabetes	10	32.2
Hypertension	08	25.8
Chronic kidney disease	01	03.2
Carcinoma prostate	01	03.2
Parkinsonism	01	03.2
No comorbidities	10	32.2

Table 2: Histopathological results obtained by thoracoscopic pleural biopsy in the studied group

Findings	Number (n=31)	Percentage
Malignancy	11	35.5
Tuberculosis	16	51.6
Non-specific inflammation	02	06.4
Acute-necrotizing inflammation	01	03.2
Endometriosis	01	03.2

Table 3: Diagnostic yield of medical thoracoscopy

Diagnosis	Number (n=31)	Percentage
Malignancy		
Adenocarcinoma	07	22.6
Mesothelioma	04	12.9
Tuberculosis		
Drug sensitive	10	32.3
Drug resistant	06	19.4
Non- specific	03	09.7
Endometriosis	01	03.2

Table 4: Correlation of thoracoscopic findings with pleural biopsy findings

Thoracoscopic findings	Pleural biopsy findings (Histopathology)										Total
	Malignancy		Tuberculosis		Non-specific inflammation		Acute necrotizing inflammation		Inconclusive		
	No	%	No	%	No	%	No	%	No	%	
Sago-grain appearance	-	-	07	25.0	01	16.7	-	-	-	-	08
Nodules	11	52.4	08	28.6	-	-	-	-	-	-	19
Adhesions	07	33.3	10	35.7	02	33.3	01	50	-	-	50
Mass	01	04.8	-	-	-	-	-	-	-	-	01
Normal	-	-	01	03.6	02	33.3	01	50	-	-	04
Other	02	09.5	02	07.1	01	16.7	-	-	-	-	05
Total	21		28		06		02				57

In this study, 28 patients out of 31 patients were diagnosed. Diagnostic yield of thoracoscopic pleural biopsy was 90.3% (Table 6).

DISCUSSION

A total of 31 patients were enrolled in our prospective observational study with pleural effusion of undetermined etiology (inconclusive thoracocentesis) in a tertiary health care set up. The median age was 52 years. Lee et al.,[17] in their study on 51 patients done at Singapore in 2007 showed that median age was 53 years (range 45–67 years) in their population. Thus, our observations regarding the mean age group around 52 years in patients who underwent Medical thoracoscopy was in concordance with the literature worldwide. Most common differentials before projecting the patients to medical thoracoscopy were TB and Malignancy, where middle age and elderly would be the usual target population as observed universally. A total of 31 patients who were enrolled in the study, 41.9% (13/31) patients had straw nature of pleural effusion, followed by 35.5% (11/31) of the cases had hemorrhagic nature of pleural effusion. About 19.35% (06/31) patients had yellow and 03.2% (01/31) patient had milky appearance of pleural effusion. Shaheen et al.,[18] conducted study in Egypt in 2014, observed out of 40 patients, 47.5% (19/40) patients presented with hemorrhagic pleural effusion, 50% (20/40) presented with straw colored and 2.5% (01/40) patient presented with green colored pleural effusion. Huo et al.,[19] conducted study at China between January 2014 and December 2016 observed 106 patients. The appearance of pleural effusion was yellow in 87.8% (93/106) patients wherein TB was diagnosed in90.3% cases. Hemorrhagic pleural effusion was noted in 12.3% (13/106) cases where in TB was diagnosed in 9.7% cases. This association was found to be statistically significant (P=0.451). Physical nature of pleural fluid can be a supportive tool in anticipating the etiology of pleural effusion.

Our results showed that the most common nature of pleural fluid was straw colored followed by hemorrhagic,

Table 5: Post-thoracoscopic complications in the studied group

Complications	Number of patients (n=31)	Percentage
Chest pain	15	48.4
Surgical emphysema	03	09.7
Infection	-	-
Post-operative fever	03	9.7
Prolonged air leak	-	-
Hypotension	01	3.2
Bleeding	03	9.7
Re expansion pulmonary edema	01	3.2
No complications	10	32.3

yellow colored, and milky. This was in concordance with Mishra et al.,[20] and was different from what was seen in Shaheen et al.,[18] Huo et al.,[19] and Shah et al.[14] The probable reason for the similarity with above mentioned study was found to be the fact that TB patients formed the major subset in this study as well like in ours where pleural fluid being straw colored is expected. The studies with hemorrhagic effusions predominantly had malignancy as the diagnosis from medical thoracoscopy like in Shaheen et al.,[18] and Shah et al.,[14] Huo et al.,[19] had yellow colored pleural fluid with TB. Physical nature of fluid is a subjective parameter. We feel that yellow color they appreciated was similar to straw color. As per our study, out of 31 patients, 81.8% (09/11) of the cases with hemorrhagic effusion had malignancy (P=0.012), 76.9% (10/13) of the cases with straw colored pleural fluid were diagnosed to have TB (P=0.036). About 25.0% (02/08) of the cases with yellow colored pleural effusion had non-specific inflammation (P=0.047). Interestingly, association of physical nature of pleural fluid and clinical diagnosis was found to be statistically significant. This finding was in concordance with the literature reviewed worldwide and Indian studies.

Out of 31 patients enrolled in the study, 90.3% (28/31) patients had abnormal thoracoscopic findings. This study indicated that 61.3% (19/31) of the cases had nodules followed by 25.8% (08/31) with sago-grain appearance.

About 9.7% (03/31) patients had normal pleura. 3.2% (01/31) patient had mass as a finding on pleural space inspection. Adhesion was a prominent feature noticed in approximately 61.3% (19/31) patients. Adhesions were found with either nodules in 57.8% (11/19) or sago-grain appearance in 31.5% (06/19) or with normal appearing pleura in 10.5% (2/19) as the only finding. In addition, pleural thickening as an associated finding was found in 12.9% (4/31) patients. Mostly pleural thickening was associated with nodules in 75% (03/04) and was the only finding with normally appearing pleura in 25% (01/04). The most common finding in our study was nodules and adhesions followed by sago grain appearance of pleura. We also found plural thickening in a few. These findings were in concordance with Helala et al.,[21] Shah et al.,[14] and Prabhu and Narasimhan[22] studies. On correlation of physical finding with clinical diagnosis we found that the most common diagnosis with sago grain appearance of pleura was TB as in Helala et al.,[21] Shah et al.,[14] and Mishra et al.[20] This was found to be statistically significant(P=0.012). Whereas most common diagnostic finding of nodular appearance of pleura was malignancy which was in concordance with studies conducted by Helala et al.,[21] Prabhu and Narasimhan,[22] and Mishra et al.[20] This association was not found to be statistically significant. On histopathological examination of pleura, 51.6% (16/31) of the cases had TB whereas 35.5% (11/31) of the cases had Malignancy, 6.4% (02/31) patients had non-specific inflammation and 3.2% (01/31) patients had acute necrotizing inflammation and 03.2% (01/31) had endometriosis. Of all the TB patients, 62.5% (10/16) were drug sensitive and 37.5% (06/16) were drug resistant TB. Among patients diagnosed with malignancy, 63.6% (7/11) were found to have adenocarcinoma and 36.3% (04/11) had mesothelioma. In our study of 31 patients, overall diagnostic accuracy, sensitivity, and specificity were 93.55%, 96.310%, and 75.00%, respectively. Overall positive and negative predictive value of study was 96.30% and 75.00%, respectively. Positive and negative likelihood ratio was 3.85% and 0.05%, respectively. A retrospective study conducted by Wang et al.,[23] at China during July 2005 to June 2006, observed 27 patients who underwent Medical thoracoscopy with diagnostic efficiency of medical thoracoscopy was 93%. Only 2 patients could not get definite diagnosis. A study conducted by Helala et al.,[21] at Kobri El-Kobba Military Hospital, Egypt in 2014 observed 40 patients wherein the diagnostic yield was 95%. Mishra et al.,[20] conducted a study at Nagpur, India during January 2013 to December 2014 observed 45 patients, overall diagnostic accuracy, sensitivity, and specificity were 91.11%, 92.31%, and 90.62%, respectively. Overall positive and negative predictive value of study was 80.00% and 96.67%, respectively. Positive and negative likely hood ratio was 9.85and 0.08, respectively. Prabhu and Narasimhan[22] conducted a study at Chennai during September 2007 to August 2010 observed 68 patients wherein the diagnostic yield was 97%. In contrast few studies had reported low diagnostic yield of medical thoracoscopy. A retrospective study conducted by Ng et al.,[24] at Pahang, Malaysia during 2006 and 2008 who performed 24 Medical thoracoscopic procedures on 22 patients in whom 2 patients had underwent repeat thoracoscopy. The diagnostic yield was found to be 45.5% (10/22 patients).A study conducted by Shah et al.,[14] at Srinagar during the period between December 2015 and December 2016, overall diagnostic yield was 80% as a whole and 96% among patients who had thoracoscopic pleural findings.

Table 6: Overall results of diagnostic test of the study

Test 1: Pleural fluid	Histopathology	
	Positive	Negative
Positive	26	03
Negative	01	01
Gold standard: Histopathology		
Diagnostic test	**Percentage**	**Confidence interval (95%)**
Sensitivity	96.30	81.03–99.91
Specificity	25.00	0.63–80.59
Positive predictive value	89.66	83.05–93.88
Negative predictive value	50.00	7.14–92.86
Positive likelihood ratio	1.28	0.73–2.27
Negative likelihood ratio	0.15	0.01–1.93
Diagnostic Accuracy	87.10	70.17–96.37
Test 2: Pleura gross appearance	**Histopathology**	
	Positive	**Negative**
Positive	26	01
Negative	01	03
Gold standard: Histopathology		
Diagnostic test	**Percentage**	**Confidence interval (95%)**
Sensitivity	96.30	81.03–99.91
Specificity	75.00	19.41–99.37
Positive predictive value	96.3	82.62–99.30
Negative predictive value	75.00	28.78–95.70
Positive likelihood ratio	3.85	0.70–21.06
Negative likelihood ratio	0.05	0.01–0.37
Diagnostic accuracy	93.55	78.58–99.21

Thus, similar to the literature, we had good sensitivity and diagnostic yield in our procedure. We had specificity of 75% which was comparatively less than other studies. This can be attributed to our first experience with the setup and three undiagnosed effusions post procedure. Based on our experience, it is suggested that medical thoracoscopy should be performed in all patients with undiagnosed pleural effusion because it has high diagnostic yield. The cost effectiveness of thoracoscopy is better in view of its

better yield. It is very simple and safe procedure with low complication rate.

Limitations of the study

1. Diagnosis of malignancy was not further studied in terms of further classification and staging
2. This study was limited by a relatively small number of patients. For future studies, larger study populations are needed
3. Beside rigid thoracoscope no other investigative method, for example, closed pleural biopsy was used for undiagnosed pleural effusion. Therefore, comparative study was not possible.

CONCLUSION

With our experience from tertiary health-care set up, medical thoracoscopy should be strongly considered in undiagnosed pleural effusion patients, that is, inconclusive thoracocentesis. Medical thoracoscopy is a noble procedure which helps the pulmonologist/surgeon to inspect pleural cavity and obtain pleural biopsy sample. It is a safe and effective diagnostic as well therapeutic tool with high diagnostic yield. As the procedure was done for the 1st time at our set up, high number of complication rates was noted. Although all complications were minor and managed conservatively. It has almost negligible morbidity and mortality rates. Most common differentials of undiagnosed pleural effusion cases are TB and malignancy.

Recommendations

1. Medical thoracoscopy should be performed as soon as possible in all patients with undiagnosed pleural effusion after initial pleural fluid reports were inconclusive
2. Medical thoracoscopy is safe method with high diagnostic yield
3. Medical thoracoscopy is a simple procedure but needs a better learning curve to minimize complication rates.

ACKNOWLEDGMENT

Nil.

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Source of Support: Nil, **Conflicts of Interest:** None declared.