VOLUME-7, ISSUE-4, APRIL-2018 • PRINT ISSN No 2277 - 8160

Original Research Paper

Medicine

MEDICAL THORACOSCOPY: A MINIMAL INVASIVE PROCEDURE BENEFITS IN A TERTIARY CARE CENTRE

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ABSTRACT

Background: Medical thoracoscopy or pleuroscopy is used in exploration of pleural space. Recently, has received importance due to its applied diagnostic and therapeutic management in diseases involving pleural spaces. In this study we share our experience with medical thoracoscopy at our institute.

Objective: To review our methods and benefits with rigid thoracoscopy

Method: In a retrospective analysis of patients who underwent thoracoscopic procedures between June,2016 to December,2017. There were 46 medical thoracoscopy performed, most common indication was pleural biopsy performed in undiagnosed cases of pleural effusion; other indications like lung biopsy in diffuse lung disease, adhesionolysis of loculated pleural effusion and pleurodesis. The patient's demographic data, indication for medical thoracoscopy, complication and outcome were recorded and analyzed.

Statistical Analysis: Statistical analysis of all 46 patients underwent thoracoscopy was done and findings expressed in terms of percentages.

Results: A total of 46 patients out of which 32 were males and 14 were females; mean age was 42 years who underwent medical thoracoscopy. In 26 patients indicated for undiagnosed pleural effusion; the diagnostic yield was 92.30%. Out of which 53.85% were of tuberculous origin, while 38.46% were of malignant origin. In 8 cases of loculated pleural effusion, 4 patients showed good improvement on chest Xray. The mean number of days post thoracoscopy ICD was 4 days in cases of empyema, who underwent thoracoscopy. There were no major complication, while minor complication in 11.54% of cases.

Conclusion: Medical thoracoscopy is a safe and simple valuable tool with low complication rates.

KEYWORDS :

Introduction:-

Thoacoscopy is a medical procedure, through which thoracic cavity is examined. In 1900's, it was used to create artificial pneumothorax and for breakdown of adhesions in cases of pulmonary tuberculosis; due to work of Hans Christian Jacobaeus.(1,2) His work also showed use of thoracoscopy to localize and diagnose benign and malignant lesions in pleura or pulmonary parenchyma.

Thoracoscopy used only for visualization of thoracic cavity is called as pleuroscopy or medical thoracoscopy, while when used for surgical interventions is surgical thoracoscopy. With recent advances and works in endoscopic technology, the indications of medical thoracoscopy has increased. Medical thoracoscopy is now indicated in undiagnosed pleural effusion, for staging of malignant mesothelioma or lung cancer, empyema, pneumothorax, pleural biopsies in diffuse lung diseases and talc pleurodesis.(3)

The purpose of this current study is to detect diagnostic yield of medical thoracoscopy in pleural effusion of unknown etiology and therapeutic benefits in cases of simple empyema, pneumothorax and recurrent or loculated pleural effusion cases.

Material sand Methods:-

This is a retrospective type of study, with our database on thoracoscopy from June,2016 to December,2017. Approval from Institutional Ethical committee was not taken, as it is a retrospective type of study. A total of 46 patients underwent medical thoracoscopy.

The technique for thoracoscopy was as per British Thoracic Society Pleural diseases Guideline 2010 were established.(4) The defined outcomes were different, depending on indication. In patient with undiagnosed pleural effusion, diagnostic yield was the endpoint. In cases with empyema, decrease in fever and improvement on chest X-ray was endpoint. In cases with loculated pleural effusion, an immediate Chest X-ray (CXR) was performed after medical thoracoscopy. A good response was complete improvement, moderate response in whom at least 50% improvement was seen, while poor response in whom there was no improvement on CXR as compared to CXR before procedure.

In cases with pneumothorax and malignant pleural effusion, the efficacy of pleurodesis was confirmed by the recurrence of their disease during follow-up period. The data was collected in the form of indication for medical thoracoscopy, procedures, complication and outcome of intervention were noted.

Statistical Analysis – The statistical data was analyzed using Statistical package for social science version 15 software. The Qualitative data are presented as number and percent. The Quantitative data were presented as mean±standard deviation(SD).

Observation&Results:-

From June,2016 to December,2017, a total of 46 patient underwent thoracoscopy for various indications at Department of Respiratory Medicine, Smt. Kashibai Naval Medical College & Hospital. The demographic details are described in Table No.1

Table No. 1 Demographic illustration.

Types	No. of cases	M:F	Age Mean (SD) years
DPL	1	-	-
Undiagnosed	26	19:07	42 (14.33)
Empyema	3	01:02	48 (28.21)
Loculated	8	03:01	38 (12.02)
Pneumothorax	4	04:00	32 (9.15)
RPE	4	01:03	55 (15.64)
Total	46	16:07	42 (14.9)

Mean age of patient enrolled for thoracoscopy was 42 ± 14.9 years. The male to female ratio was 16:7 and procedure site right to left ratio was 14:9. There were no any major complication, while we observed 12

minorcomplication(26%).Themean±SDnumberofdayspostmedical thoracoscopyICDwasfor5±5.2days.

A total of 26 patient underwent thoracoscopy due to undiagnosed pleural effusion. There were 19 males and 7 females. The diagnostic yield was 92.30%. Out of these 26 cases, 14 were diagnosed as tuberculous pleural effusion (53.85%), while 10 were diagnosed a malignant pleural effusion (38.46%) and 2 remained undiagnosed even after thoracoscopy. 3 out of 26 patient of undiagnosed pleural effusionhadminorcomplication(11.54%)

The mean(SD) age for diagnosis of tuberculous pleural effusion was 33(10.59) years while that of malignant pleural effusion was 54(10.84) years.

In3patientwithsimpleempyema,inwhichmaletofemaleratiowas1:2. Allpatientunderwentthoracoscopyguidedcompletedrainageofpus and adhesionolysis if any were present. All 3 patient had ICD post thoracoscopy for 4 days. All patients improved with decrease in fever andimprovementonCXR.

In 8 patients of loculated pleural effusion , 6 were males and 2 were females. Out of these 8 cases, 4 (50%) showed good improvement on CXRafteradhesionolysiswhile3(37.5%)hadmoderateimprovement; while1(12.5%)gavenoresultofimprovementonCXR.

In4patientofPneumothorax,allweremalepatients.1caseunderwent pleuralbiopsy,whichwassuggestiveofgranulomatousinflammation, while remaining 3 cases underwent pleurodesis. In total 7 patients underwent pleurodesis, out of which 4 cases were of recurrent malignantpleuraleffusion(RPE),while3wereofpneumothorax.1case underwent talc pleurodesis, while remaining underwent pleurodesis with oxy-tetracycline. Talc pleurodesis was successful, while in 4 (66.67%)casesof6pleurodesiswithoxy-tetracyclineweresuccessful.

Therewas1patientwithdiffuseparenchyemallung(DPL)disease,who already had iatrogenic pneumothorax, so underwent thoracoscopic lungbiopsy.Itwassuggestiveofsilicoproteinosis.

There were no any major complications during or after procedure, in our study. Minor complications were in 12 (26.08%) of patient, which were prolonged airleak (more than 7 days) in 3 (6.52%), severe pain at sitein7(15.21%)ofpatientand2(4.35%)patienthadbleeding.

Discussion:-

Though medical thoracoscopy being boon for interventional pulmonary medicine, it is being underused in India; especially, where there is lack of thoracic surgeons. Medical thoracoscopy is a safe tool, overall cost effective and has better yield with lesser duration of hospitalstay.

This study included 46 patients, out of which 26 had undiagnosed pleural effusion. All 26 patient had exudative effusion, so underwent thoracoscopicpleuralbiopsyfordeterminationofetiologyofeffusion. Inourstudyhistopathologicaldiagnosiswasestablishedin24cases,i.e medical thoracoscopic pleural biopsy yielded in 92.3%. This results werecomparabletootheroldstudieswhichrangedfrom70%-95%.(5-8) However, tuberculous was the most common pathology 53.85% in undiagnosed effusion; as compared to other studies in which malignant effusion was common ranging from 50 – 70%.(7,8) This contrary might be quiet possible, as tuberculosis is highly endemic in India.

There were 3 cases of simple empyema, subjected to thoracoscopy guideddrainage.Afewseptationwerevisualized,werebrokenwiththe help of thoracoscope condute. In our study, chest tube was removed within 4 days. This result was comparable with Landreneau et al. However, our sample size was way much smaller.(9)While in loculated effusion, thoracoscope guided fibrinolysis provided good improvementin50%ofcasesand37.5%hadmoderateimprovement. It is well known that VATS is very effective at treating incompletely drained parapneumonic effusions.(9-11) In our study, medical thoracoscopyalthoughinferiortoVATS,butprovidedgoodamountof resultinalowbudgetsetting.

Therewasatendencyforloculationofpleuralfluidinmalignantpleural effusion being done by repeated thoracentesis resulting in multiple loculation with compromising of normal respiration. For this indication, medical thoracoscopy did not result in a high success rate because of the extensive adhesion found in the pleural space. The decisiontoperformearlypleurodesisisthereforerecommended.

Light et al reported recurrence rate of primary spontaneous pneumothorax was 32% and 47% in secondary spontaneous pneumothorax, with a median follow-up of 3 years.(12) So, we attempted pleurodesis in 3 cases of pneumothorax, to avoid its recurrence. However, due to low budget setting, our patient opted for oxy-tetracycline for use. In our study, bullae were only visualized, we deffered doing stapling or electrocoagulation for bullae, as we din't haveenoughexperienceofit.

No major complications were noted during or after procedure. Only fewminorcomplicationspostthoracoscopybleedingandseverepain (inallcasesofpleurodesis)werenoted.

The improvement of techniques and instruments in medical thoracoscopy make this procedure useful in many indications but experience of the performer is still the barrier to developing this procedure in many medical centers. Adherence to the step by step procedure in terms of the indications in performing medical thoracoscopyisrecommendedformedicalcentersthatwanttosetup thisprocedure

Conclusion:-

Outcomes of medical thoracoscopy varies with various indications. With results our study, we conclude medical thoracoscopy is safe and simplevaluabletoolwithlowcomplicationrate.

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