ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICINE

DEPARTMENT OF INTERNAL MEDICINE

ETIOLOGY OF PLEURAL EFFUSIONS AMONG HOSPITALIZED ADULT PATIENTS AT TIKUR ANBESSA TEACHING HOSPITAL: FIVE YEARS RETROSPECTIVE CROSS-SECTIONAL STUDY.

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A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE, SCHOOL OF MEDICINE, DEPARTMENT OF INTERNAL MEDICINE IN PARTIAL FULFILMENT OF THE REQUIRMENT OF SPECIALITY CERTIFICATE IN INTERNAL MEDICINE.

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I, the undersigned Internal Medicine Specialty student, declare that I have submitted my original work on a title of Etiology of pleural effusions among hospitalized adult patients at Tikur Anbessa teaching hospital: Five years retrospective cross-sectional study for the examination.

Submitted by:

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this thesis work has been submitted for examination with my approval as an advisor.

Examiner _____

Signature_____ Date_____

Approved by:

1. Principal advisor

   Dr. Amsalu Bitewu Signature: _____Date: _____

STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis, and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every serious effort has been made to avoid plagiarism in preparing this thesis. This thesis is submitted in partial fulfillment of the degree of master in pediatric and child health nursing to AAU. I would like to declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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Acronym and Abbreviations

AAU Addis Ababa University

AFB Acid fast bacilli

CHF congestive heart failure

CXR chest radiography

CT computer tomography

PE Pleural effusion

PPE Parapneumonic effusion

TASH Tikur Anbessa specialized hospital

TB Tuberculosis

MPE malignant pleural effusion

TPE Tuberculosis pleural effusion

US ultrasound

List of Tables

Summary

Background: Pleural Effusion (PE) is a condition associated with significant mortality and morbidity, with varying etiologies. Etiologies of PE are influenced by geography, patient age, and time trends. The variations in etiologies of PE according to time necessitate the need to investigate the current trends of pleural effusion in TASH.

Objectives: To describe etiology of pleural effusion in patients at TASH

Methods and materials: Retrospective cross-sectional study design was used. The study involved non randomly selected 143 patients evaluated with PE as primary or secondary disease complication. SPSS 26 was used for data analysis. The study was carried out between October, 2024 and February 2025. The independent and dependent variables analyzed using descriptive statistics (means, standard deviations, frequencies, and percentages) and presented in tables, figures and graphs. Pearson correlation(r) used for association. For all analysis a P-value <0.05 was used as cutoff points

Result: Male slightly more represented than Females ratio of 1.5:1. Cough, chest pain, dyspnea, weight loss were prominent presenting symptoms accounting 75.5%,49.7%,42% and 39% respectively. Right side presentation was the most common 71 (51%). All the patients were tested for HIV, only 10 (7%) were found to be HIV positive. Tuberculosis found to be commonest cause of pleural effusion 68(47.6%) followed by malignant pleural effusion 52(36.4%) and parapneumonic effusion 23 (16.1%). Only 4 of TPE have bacteriologic diagnosis. Increasing in ESR (P -Value =0.02) and lymphocytic effusion (P – Value =0.003) are significantly associated with TPE The presence of comorbidity is associated with PPE (P-Value = 0.007). There are no significant association between HIV, anemia, side of effusion with tuberculosis.

Conclusion: Tuberculosis and malignant pleural effusion are the two commonest causes of PE in our setup. Diagnosing TB bacteriologically has been difficult. Increasing in ESR and lymphocyte percentage is significantly associated with TPE.

Introduction

Background

Pleural effusion is the pathological accumulation of fluid in the pleural space. resulting from an imbalance between pleural fluid formation and removal.(1) PE is primary manifestation or secondary complication of many disorders. Its prevalence is around 400 cases/100 000 inhabitants with a distribution of etiologies related to the prevalence of underlying diseases, although we have no local data, in USA PE affects approximately 1.5 million patients per year. (2)(3) Causes vary widely, ranging from fairly harmless effusions accompanying viral pleuritic to prognostically highly relevant ones due to congestive heart failure or cancer(4) Identifying underlying etiology is important for appropriate treatment.

The presenting manifestations of pleural effusion are largely determined by the underlying disease(4). Many patients have no symptoms that can be traced solely to the effusion itself. Such symptoms, if present, reflect an inflammatory response of the pleura, a restriction of pulmonary mechanics, or a disturbance of gas exchange.(4) Common presenting symptoms are Pleuritic pain, dyspnea and dry cough. These symptoms are non-specific and predictive accuracy of these symptoms are not studied.(5)

Pleural effusion (PE) is a common clinical problem with >60 recognized causes, including local pleural processes, underlying lung, systemic and multi-organ dysfunction, and drug-induced disease .(6)Its most common causes are congestive heart failure, cancer, pneumonia, tuberculosis and pulmonary embolism.(4)PE can be due to Exudative or transudate process.(1) Causes can be single or multiple

In studies done previously tuberculosis, pneumonia and malignancy were the commonest identified causes specially in developing countries.(1) Prevalence is different across age, geographic areas, because of different underlying disease .Infectious disease common in developing countries and malignant PE increases with age of the patient.

Identification of specific cause of PE is important; first as the treatment and prognosis of pleural effusion largely depend on its cause(4). Second, to uncover change in trends of etiology with change in global distribution of infectious disease, demography with aging and climate change.

Etiology of PE are influenced by socioeconomic and demographic factors. This study aims to describe what commonest causes of pleural effusion are; what prevalence of undiagnosed PE is; how etiology of pleural effusion is influenced by demographic factors.

Statement of the problem

Pleural effusion is a disease entity with extensive list of etiology presenting with accumulation of fluid in pleural space. There is advancement in diagnosis and management of pleural effusion. Despite this advancement prevalence of pleural effusion remain to be high in clinical practice. In our setup there is a paucity of information on the burden of PE, specific etiology contributing to PE and their sociodemographic characteristics.

Significance of the study

The prevalence of etiologies of pleural effusion is not studied in TASH. This study enables us to know prevalence of etiologies pleural effusion in tertiary hospital. This is also important for clinicians, policy makers and managers to decide for budget allocation and further plans for diagnostic and management of individual cases. This data might also be helpful in designing preventive strategies of pleural effusions presenting as their major problem.

Literature review

Introduction

Pleural effusion is common in routine medical practice and can be due to many different underlying diseases. Causes are different depending on socioeconomic status, age and exposures. Management of PE includes treatment of underlying cause and PE specific treatment which extends from pleurodesis, VATS, to the placement of a permanently indwelling pleural catheter(4) Epidemiological data on the local prevalence of different causes of PE may play a crucial role in the management strategy of patients with this condition(3)

Sociodemographic characteristics

There is significant variability in epidemiological data that should be interpreted with caution. This is because they are affected by a number of factors, such as ethnicity, local burden of different diseases, age structure of the population and the availability and

quality of a healthcare system.(3) Studies have showed difference between male and female as factor of etiology, with predilection of PE for male ;this was attributed to increased consumption of smoking and alcohol.(1)(5) Other studies did not show male predominance .(7)

Etiology of PE depend on socioeconomic status. Common process of effusion from developing world identified in studies were exudative. This is not similar to studies done in developed countries where transudate PE predominates(5)(2) The reasons behind this difference may relate to the specific etiological factors contributing to PE in both patient population. IBRAHIM et al also showed 78 percent have exudative PE according to Light's criteria, while the rest 22% had transudate effusions(7). Another study also showed association of patients' age with type of effusion. Transudate type of effusion is related to age p-value of 0.018. As age increases the possibility of presenting with this type of PE increases. As for exudates no association with Age.(7)

The dominant etiology in developing countries is different from developed countries, infectious agent being commonest cause in developing countries. Good example is TB. In developing countries TB is the most common infectious cause of PE.(1,5).This could be explained by the fact that TB, HIV endemicity, and low socioeconomic status which are the risk factors for TB development and very common in these settings compared to the developed countries**.** Top three causative agent for PE in studies done from developed countries were CHF, pneumonia and MPE (3,4) .

Patients with TPE were significantly younger than patients with PPE and malignancy with significant HIV co infection up to 50% .(3)(1) (5) Study from Nigeria, the most common cause of PE was TB (32.9%), followed by malignancy (29.1%) and pneumonia (15.0%).(1) Retrospective study from Kenya in 1234 patients 63.6% of exudative effusion is caused by TB, followed by bacterial pneumonia and empyema with 131 (26.2%) and 37 (7.4 %) respectively.(5). There are not only huge regional differences in the incidence rate of TB but also significant differences in TB

manifestation; in low TB incidence countries only 2-5% of TB patients present with TPE(3,8) .

Study done in Poland Identified causes were, CHF 37.4%, pneumonia 19.5%, malignancy 15.4%, liver cirrhosis (4.2%) and the cause of PE in 6.7% patients was not established.(3)according to retrospective study done in 3000 patients admitted to hospital in Spain cancer 27%, heart failure 21%, pneumonia 19%, tuberculosis 9%, abdominal surgery 4), not surprisingly TB was commonest cause in younger population below 34 (51%) ;while heart failure dominates in older age.(9) Generally Pleural effusion is most commonly diagnosed in middle-aged and older individuals. The mean age of patients was 46.72 years from Kenyan study (5)

Etiology of pleural effusion

Commonest etiology of transudate effusion is CHF.(7) There are also other Systemic conditions which causes significant portion of PE. Those are renal, hepatic, connective tissue disease, hypothyroidism and pulmonary embolism.(5) CHF is one of commonest cause of PE in developed countries.(3) PE in patients with CHF is related to both right and left ventricular failure, biventricular failure and left ventricular failure are significantly higher than isolated right ventricular failure. The median age of PE due to CHF is significantly higher than Para pneumonic effusion and MPE(3) studies done in Poland, Spain showed differences between prevalence of CHF associated PE ; not only due to local epidemiological situations and study group characteristics, but also to the definitions and methods used in the particular studies.(3,9)

PE in CHF can be unilateral or bilateral different studies showed different results, largely attributed to method of pleural fluid detection, study by Piotr Korczyński et.el showed 51% of pleural fluid was bilateral(3). The second leading cause of PE is malignancy.(1,2,4,5). they account for more than 125,000 hospital admissions per year in the United States, with estimated inpatient mortality of 11.6% and associated hospital charges of more than $5 billion per year.(10)Lung cancer is common cause of malignant

pleural effusion; it accounts for more than one-third of cases, followed by breast cancer (16.8%) and malignant lymphoma (11.5%) (4)(11).

Studies in Nigeria reflect same concept with different prevalence, lung cancer ((49.2%) being the commonest cause of MPE followed by breast cancer (25.4%).(1) Pleural effusion in a patient with cancer is associated with a poor prognosis with a median survival of 4 to 7 months from the time of diagnosis.(4)(12) There is Increasing trend in diagnosis of MPE, in previously undiagnosed PE, due to availability of VATS and pleural biopsy.(1)

PPE is any effusion in the pleura secondary to pneumonia or lung abscess. It is the most common exudative effusions occur in 20 to 40% of patients who are hospitalized with pneumonia. (13) Compared to pneumonia patients without PPE , those patients with pneumonia and PPE have higher mortality.(11) *Streptococcus pneumoniae, Staphylococcus, oral streptococci and anaerobes are the commonest bacterial etiology for PPE.*

TPE is a common form of extrapulmonary tuberculosis (TB), varying in incidence from 3- 30% depending on local prevalence of TB HIV coinfection. PTB accounts for 4% of all TB cases in the USA (14), 10% in Spain(15) and 20% in South Africa . It is well known fact that people living with HIV (PLHIV) have higher rates of extrapulmonary TB this is true for pulmonary TB. Bintcliffe et al. found that 70% of 126 patients with a pleural effusion did, indeed, have a single cause for it, but 30% had more than one cause. Multi-factorial pleural effusion can present a diagnostic and therapeutic challenge(16)

Most of pleural effusions are right side predominant as repeatedly seen in studies invariably.(1,5) commonest cause of bilateral PE is CHF.(5). Causative diagnosis in patients with PE is challenging and often requires not only a thorough clinical assessment but also the use of different imaging techniques, diagnostic thoracentesis with pleural fluid analysis, pleural biopsy and/ /or thoracoscopy. pleural tap enables the differentiation of a transudate from an exudate, which remains, at present, the foundation of the further diagnostic work-up in line with the British Thoracic Society guidelines (4)

The prevalence of PE depends on the sensitivity of methods used to detect pleural fluid; Radiological investigations played a significant role in the diagnostic process. CXR is less sensitive to diagnose PE compared to other methods such ultrasound, CT or autopsy(3) Despite Radiography is commonest investigation modality used to

diagnose PE due to its cost, availability and convenience.(5)Use of pleural biopsy as diagnostic modality is low(7%). (5) Its use is generally limited due to lack of trained professionals. The use of echocardiography and US to diagnose PE is also low but results are very valuable clinically.

Thirty-day mortality rate ranged from 0% for tuberculous pleurisy to 40% for malignant PE (3) Patients with a non-malignant pleural effusion have a one-year mortality in the range of 25% to 57%(17) Although 30-day mortality in patients with CHF was relatively high, it was lower than that in Parapneumonic PE and MPE, patients with Parapneumonic pleural effusion have higher mortality.(3)(4)

OBJECTIVES

General objective

- ✓ To describe prevalence of etiology of pleural effusion in patients admitted to TASH with radiologically confirmed PE

Specific objective

- ✓ To describe the prevalence parapneumonic, tuberculosis and malignant pleural effusions
- ✓ To describe the prevalence of bacteriologically confirmed and clinically diagnosed tuberculosis pleural effusion
- ✓ To describe associated risk factors for different causes of pleural effusion
- ✓ To describe the clinical features of different causes of pleural effusion

METHODOLOGY

Study Area and Period

Study was conducted at TASH teaching hospital. Black lion specialized hospital is government owned multidisciplinary largest referral teaching hospital, located in Lideta Sub City with more than 600 beds. TASH have the first establishment of chest clinic in the country and run by PCCM sub specialties. In addition to the chest clinic, PCCM department is involved in leading Medical ICU care and treatment of patients, teaching undergraduate medical students, internal medicine residency and fellowship programs. The study was conducted for two months from October, 2024 to February 2025.

Study design

Hospital based retrospective cross-sectional study design was used.

Population and sampling

Source Population

All patients hospitalized for in patient care with physician diagnosis of pleural effusion, diagnosis made with imaging, in study time period at TASH.

Study population

Study population was randomly selected patients with diagnoses of pleural effusion admitted to TASH; those who fulfill inclusion criteria from January 2020 to December 2024

Sample size determination

Non probable Sampling method (convenience sampling) was used. Due to lack of extensive local research on PE which determine its prevalence.143 patients who fulfill inclusion criteria was selected non randomly.

Eligibility Criteria

Inclusion criteria

- Patients with pleural effusion confirmed by imaging
- Pleural effusion that was tapped and diagnostically analyzed
- Charts with complete documentation

Exclusion criteria

- Having non-investigated pleural effusion (no thoracentesis findings files)
- Patients with incomplete charts

Study variables

Dependent variables: causes of pleural effusion

Independent variables:

Sociodemographic variables: Age, residency, smoking status, income, occupation

Clinical variables: Biomass exposure, clinical symptoms, Hemoglobin, CRP, ESR, serum albumin, HIV serostatus

Operational definition

Pleural effusion; is an abnormal collection of fluid in the pleural space detected by imaging

Bacteriologically confirmed TB pleural effusion; pleural effusion specimen has tested positive by smear microscopy, culture or WHO approved rapid diagnostics for TB

Clinically diagnosed TB pleural effusion; TB diagnosed without bacteriological confirmation

Parapneumonic effusion; pleural effusion that form in pleural space adjacent to a pneumonia

Malignant pleural effusion; detecting malignant cell in pleural fluid or demonstrating these in pleural biopsy

Smoking; current or previous use of tobacco and/or shisha

Biomass exposure; Those who reported using wood or coal for domestic cooking /heating ever for at least 6-month duration and current user

Clinical symptoms; symptom of related to pleural effusion (SOB, chest pain, cough) and underlying etiology (fever, weight loss, night sweating

Data Collection Processing and Analysis

Data were collected from patients' medical records using standardized questionnaire prepared by investigator. The collected data will then be cleaned and coded. The statistical analysis was performed using SPSS for windows software. The independent and dependent variables will be analyzed using descriptive statistics (means, standard deviations, frequencies, and percentages) and presented in tables, figures and graphs. For all analysis a P-value <0.05 was used as cutoff points

Result

Socio-demographic and Clinical Characteristics

Of the reviewed medical chart more than half of the patients are male contributing 86 (60.1 %) and female 40% with median age of 49 (14, 91). Comparable representation of above 50 and below 50 years of age. More three-fourth of the participants pays out of pocket to get the treatment contributing, 91 (63.3). Of recorded Pleural Effusion, Right Pleural Effusion contributed the most counting 73 (51%) while the Bilateral Pleural Effusion was the least recorded counting 12 (8.4%). While TPE was the most diagnosed 68 (47.6%), PPE was the least diagnosed 23 (16.1%).

Chest radiography was the most used imaging used for diagnosis, while Pleural taps the most procedure used for diagnosis, contributing 137 (95.8%) and 139 (97.2), respectively. Pleural gene expert, Pleural AFB, Pleural fluid culture, Sputum gene X pert or AFB read Negative for all most all of the cases, 139 (97), 141 (98.6), 139 (97.2), and 141 (98.6) respectively. Additionally, Pleural fluid LDH, and Pleural fluid Protein's means score reads 808.5 (962.5), and 4.43 (1.5) respectively. The common type of pleural effusion was Exudative 136 (95.1). Majority of the records were recorded as HIV negative status, 133 (93).

Of the total TB diagnosed (68) cases, 54 (37.8) were diagnosed clinically. Of all the reviewed charts, 75 (52.4) were identified having comorbidity. Of the recorded comorbidities, HTN was the most reported comorbid case 30 (44). Only 18 (12.6) were recorded as smoker.

Table 1. Socio-demographic and clinical characteristics of medical records from January 2020 to December 2024 (n=143)

.	Variable	Category	Frequency(percent)
1.	Sex	Male	86 (60.1)
		Female	57 (39.9)
2.	Age Mean 49 (14, 91)	<50	71 (49.7)
		>=50	72 (50.3)
3.	Source of treatment expenses	Out of pocket	91 (63.3)
		Health insurance	49(34.3)
4.	Biomass exposure	Yes	49 (34.3)
		No	81 (56.6)
5.	Pleural effusion	Right	73 (51)
		Left	58 (40.6)
		Bilateral	12 (8.4)
6.	Diagnosis	PPE	23 (16.1)
		MPE	52 (36.4)
		TPE	68 (47.6)
7.	Imaging used for diagnosis	Chest radiography	137 (95.8)
		Ultrasound	90 (62.9)
		CT	73 (51)
8.	Procedures for diagnosis	Pleural biopsy	38 (26.6)
		Pleural taps	139 (97.2)
		Echocardiography	9 (6.3)
9.	Pleural fluid gene x pert	Positive	4 (2.7)
		Negative	139 (97)
10.	Pleural AFB	Positive	2 (1.4)
		Negative	141 (98.6)
11.	Pleural fluid culture	Positive	4 (2.8)
		Negative	139 (97.2)
12.	Pleural fluid LDH	Mean (Stand. Dev.)	808.5 (962.5)
13.	Pleural fluid Protein	Mean (Stand. Dev.)	4.43 (1.5)
14.	Sputum gene X pert or AFB	Positive	2 (1.4)
		Negative	141 (98.6)
15.	Type of pleural effusion	Exudative	136 (95.1)
		Transudative	7 (4.9)
16.	HIV status	Positive	10 (7)
		Negative	133 (93)
17.	ESR	Mean (stand. Dev.)	68.23 (40.4)
18.	Hemoglobin	Mean (stand. Dev.)	12.6 (2.45)
19.	Anemia	Yes	77 (53.8)
		No	66 (46.2)
20.	TB diagnosis **(only 68 are TB)**	Clinical	54 (37.8)
		Bacteriological	4 (2.8)
		Histopathology	10 (7)
21.	Comorbidity	Yes	75 (52.4)
		No	68 (47.6)
22.	If yes n=68	HTN	30 (44)
		Diabetes	16 (23.5)
		CVS	6 (8.8)
		Others	16 (23.5)
23.	Lymphocyte	Mean (stand. Dev.)	68.1 (29.7)

24.	Neutrophil	Mean (stand. Dev.)	31 (29.7)
25.	Smoking	Yes	18 (12.6)
		No	125 (87.4)

Prevalence of TPE, PPE and MPE

Of the diagnosed Pleural Effusion, majority was TPE 68 (47.6%) followed by MPE, 52 (34.6%).

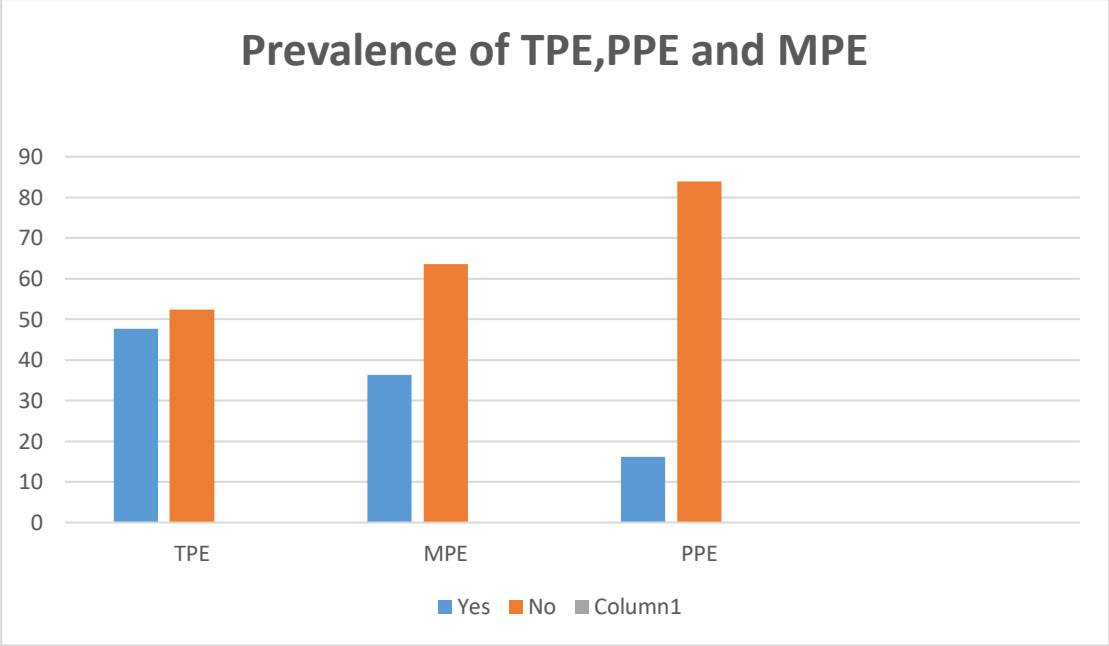

Figure 1: Prevalence of TPE, PPE, and MPE of medical records from January 2022 to December 2024 (n=143)

Clinical Presentation of Patients with Pleural Effusion

Of the recorded clinical presentation, cough was the most recorded clinical presentation 180 (75.5), followed by Chest pain 71 (49.7) and Dyspnea 59 (41.3).

Table 2. Clinical presentations of patients with pleural effusion medical records from January 2022 to December 2024 (n=143)

Clinical Presentations	N (%)
Cough	180 (75.5)
Chest pain	71 (49.7)
Dyspnea	59 (41.3)
Fever	20 (14)
Weight loss	56 (39.2)
Night sweeting	22 (15.4)

Correlation of TPE, MPE and PPE

Lymphocyte is positively correlated with TPE with Pearson Correlation of 0.270 with P-Value= 0. 03. ESR is positively correlated with Pearson Correlation of TPE 0.191

with P-Value= 0.05. . On the other hand, age is found to be negatively correlated with TPE with Pearson Correlation of -0.325 with P-Value= 0.01. Presence of anemia positively correlated with TPE but not significant (r=0.11, P=0.19)

Age is positively correlated with MPE with Pearson Correlation of 0.368 at P-Value= 0.01. .Smoking positively correlated with r of 0.064 at P-value=0.449. LDH positively correlated with MPE and TPE but not significant (r=0.107, P=0.202)

Presence of comorbidity is positively correlated with PPE with Pearson Correlation of 0.226 at P-Value= 0.01.

Table 2. Pearson Correlation of patients with pleural effusion medical records from January 2022 to December 2024 (n=143)

Correlations				
		TPE	MPE	PPE
Smoking	Pearson Correlation	-.150	.064	
	Sig. (2-tailed)	.073	.449	
	N	143	143	
Lymphocyte	Pearson Correlation	.270**		
	Sig. (2-tailed)	.003		
	N	120		
Heamoglobin_Cat	Pearson Correlation	.151		
	Sig. (2-tailed)	.071		
	N	143		
ESR	Pearson Correlation	.191*		
	Sig. (2-tailed)	.023		
	N	142		
DM	Pearson Correlation	-.027		.086
	Sig. (2-tailed)	.749		.306
	N	143		143
Age	Pearson Correlation	-.325**	.368**	-.040
	Sig. (2-tailed)	.000	.000	.633
	N	143	143	143
Sex	Pearson Correlation	.232**	-.246**	.007
	Sig. (2-tailed)	.005	.003	.938
	N	143	143	143
Pleural fluid LDH	Pearson Correlation	-.082	.107	
	Sig. (2-tailed)	.328	.202	

	N	143	143	
Hemoglobin	Pearson Correlation	.110		
	Sig. (2-tailed)	.191		
	N	143		
Presence of comorbidity	Pearson Correlation	-.103		.226**
	Sig. (2-tailed)	.222		.007
	N	143		143

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Discussion

This study Is done to determine prevalence and clinical characteristics of PE: TPE, PPE and MPE. The most common cause of PE is Tuberculosis 68 (47.6%) followed by MPE, 52 (34.6%). As compared to other Ethiopian studies assessing cause of tuberculosis pleural effusion 70.9% at Gonder university hospital. Ethiopian studies which asses causes of empyema demonstrate 59.1% at TASH.(18) The second common cause of pleural effusion in malignant pleural effusion. This is comparable to other studies done in developing countries.(1) Study in Gondor showed less than 5% and 29% from Nigeria studies(1). This difference is mainly due to referral system, and being the largest cancer treatment center in the country. Lung cancer commonest cause of MPE followed by breast cancer this is in agreement with other studies.(1)This underline the need for surveillance and early detection in cancer patients to improve outcome.

TPE diagnosis is mainly clinical: presentation of patient and histopathologic evidence which account for 94% of TPE diagnosis, this is due to poor yield of pleural fluid. Pleural fluid microbiologic studies yield was not satisfactory providing evidences. There were only four positive specimens for GXpert and three specimens grew bacteria on culture. This is go hand in hand with previous studies.(18) The mean age of diagnosis is 49 with 50% of patients below 50 years of age. Which align with previous studies PE commonly diagnosed in middle aged and older individuals.(5) More than half are male contributing to 60% and female 40%, male in agreement with other studies.(1)(5)

Cough was the most recorded clinical presentation 180 (75.5), followed by dyspnea 41.3%, weight loss 39.2%, Chest pain 71 (49.7) which is in agreement with other studies(1).those symptoms are nonspecific but they can prompt physician to put PE as a possible differential. But fever in only 14% this is due to usage of only objective measurement of fever than subjective complaint. In this study there is right side predominance similar to prior multiple studies.(1,18) Similar to other studies in developing countries exudative effusion is dominant due to focus of the study on infectious cause and malignancy.

The magnitude of HIV infection in pleural effusion due to tuberculosis patients were 10(7%),this is lower than other previous studies.(18) In older studies there were no association found between HIV and development of TPE.(19)(18) There is no clinically

significant association between side of effusion, level of LDH, anemia, presence of comorbidity and TPE. On the other hand, presence of comorbidity is strongly associated with development of PPE. Only 12.6% of patients are documented to have smoking history, and smoking showed not to be significantly associated with MPE. Increasing age is significantly associated with development of PE(7). Level of ESR and Lymphocyte pleural effusion which account for 85% of TPE are significantly associated with TPE.

Conclusion and Recommendation

PE is a common clinical problem confronting physicians TB, malignancy, and pneumonia are found to be the leading causes of PE. Microbiological evidence for diagnosis was not satisfactory. Lymphocyte predominant effusion is significantly associated with TPE. Clinical - laboratory pathology service are required for proper diagnosis. Screening for breast and lung ca according to current guidelines is recommended. A multidisciplinary approach is needed for proper diagnosis and management .Proper documentation of pleural fluid analysis is also very important.

Ethical approval

Ethical approval was granted by the institutional review board of the College of Health Sciences, Addis Ababa University.

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