PATTERN AND OUTCOME OF MEDIASTINAL MASSES IN CHILDREN OPERATED AT TIKUR ANBESSA SPECIALIZED TEACHING HOSPITAL, ADDIS ABEBA, ETHIOPIA:FIVE YEARS EXPERIENCE

By

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Finally, I would like to thank my colleagues as they devoted their time to discussing important technical issues with me every time up to final result presentation.

Declaration

I hereby declare that this thesis is my original work and has not been presented for a certificate in any other university. All sources of materials used for this thesis have been duly acknowledged and properly cited.

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The undersigned have examined the thesis report entitled ‘‘Pattern and outcome of mediastinal mass in children operated at Tikut anbesa specialized hospital Addis ababa Ethiopia, five years’ experience’’ presented by Dr Abebe Tsegaye with registration number GSR/5738/12, a candidate for speciality certificate in pediatric surgery and hereby certify that it is worthy of acceptance.

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LIST OF ABBREVIATIONS AND ACRONYMS

AAU ……...Addis Ababa University

CSF …… … ...Cerebrospinal Fluid

CT ……...Computed Tomography

E.C …… ...Ethiopian Calendar

FMOH……Federal ministry of Health

GN …… Ganglioneuroma

ICU ……Intensive Care Unit

MRI …… Magnetic Resonant Imaging

MRN ……...Medical Registration Number

NHL……. Non-Hodgkin's Lymphoma

NBL……...Neuroblastoma

HD …… Hodgkin's Disease

TASH……. Tikur Anbessa Specialized Hospital

SPSS……Statistical package for Social science

SSI …….....Surgical Site infection

SVS …… ……. Superior Venacaval Syndrome

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ABSTRACT

Introduction:Mediastinal mass represent congenital anomalies, infectious, Pseudo masses, benign and malignant neoplasms. Over one-half of children with mediastinal mass are symptomatic. Mediastinal mass represents wide varieties of histologic morphology and require many different forms of surgical and non-surgical treatment. Principle involved in the treatment of mediastinal mass are protection of airway from compression, accurate diagnosis and complete resection with minimal morbidity.

Material and Method: - Institution based retrospective cross-sectional study was conducted at TASH, Addis Ababa Ethiopia among children who were operated with the diagnosis of primary Mediastinal mass. Patient demographic, Clinical radiological histological and perioperative information collected. Data entered and cleaned using Microsoft excel and was analyzed using the SPSS(IBM)version 26. Result: Primary mediastinal mass was found in 15(55.6 %) of male with Male to female Ratio 1.25:1. Mean age at presentation was 3.53 years with a median size of the mass 6.7 cm. The most common location of tumor was posterior mediastinum 14(51.9 %) followed by Middle mediastinum 9(33.3 %). Bronchogenic cyst (37 %) were the commonest histologic type followed by Duplication enteric cyst (29.6 %), Neurogenic tumor (11.1%), Germ cell tumor (11.1%) lymphatic malformation (7.4 %) and other (3.7) %. Perioperative complication rate was 44.4 % and mortality rate accounts 14.8 %. Most common complication accounts for pulmonary complication 25.9%.%. Injury to the mediastinal structure including major vessels, esophagus and thoracic duct accounts 11.1 %. Conclusion and Recommendation: - Perioperative complications is common after resection of mediastinal mass in children including pulmonary complication, mediastinal structure injury, Drug related complication, SSI and Death. Minimal invasive surgery is possible alternative to open mediastinal mass resection and it has shorter hospital stay with minimal morbidity so our institution can apply this different technique of intervention.

Keywords: Mediastinal Mass, Thoracotomy, children, Outcome

1. INTRODUCTION

Mediastinumis located in the central portion of the thorax between the two pleural cavities, the diaphragm and thoracic inlet (1). It is the most common location of chest masses in the pediatrics population. Mediastinal mass represents congenital anomalies, infectious, Benign and malignant neoplasm and Pseudomasess (2). Mediastinal masses including cysts in pediatric patient are placed in one of three mediastinal compartments: Anterior, Middle and Posterior (2,3,4). Over one-half of children with mediastinal mass are symptomatic and malignant lesion have a greater chance of being symptomatic than benign lesion.

Clinical sign and Symptoms depend on site, size, nature, age and types of Mediastinal Mass (5,7). Symptomatic children have different degree of respiratory symptoms, Cardiovascular compromise, Neurologic, Systemic and Other manifestations. Presentations includes: Cough, stridor, dyspnea, wheezing, myasthenic symptoms, chest pain ,fever, peripheral emboli, pleural effusion, pericardial effusion, Superior vena caval syndrome, neck mass and neurological complication symptoms(6,7).

Imaging Modalities help to diagnose mediastinal mass in children includes: Ultrasound, Chest x ray, CT scan and MRI. Ultrasound could be able to differentiate cystic from solid mass and be able diagnose mediastinal mass in utero. Ninety percent of the mediastinal masses can be seen on posteroanterior and lateral chest radiography. CT establish the site of mediastinal mass, Consistency and architecture of the mass, the relationship to the adjacent structures and the other details. CT is also highly effective at differentiating between fatty tissue, cystic or calcification, vascular component and soft tissue and also important for estimating the patency of airway. Magnetic resonant Imaging (MRI) may have some advantage over CT for defining the relationship of tumor to the spine and possible invasion in to the adjacent structure and better define the vascular origin of masses (9).

Mediastinal masses represent wide varieties of histologic morphology and require many different forms of surgical and non-surgical treatment (10).Most mediastinal mass regardless of whether they are malignant or benign require surgical intervention for the diagnosis or definitive treatment .Principle involved in the treatment of mediastinal mass are protection of airway from

compression, accurate diagnosis and complete resection with minimal morbidity . Fetus Who develop progressive non immune Hydrops, cardiac failure or mediastinal shift with compression of developing lung tissue may benefit from in utero decompression or resection of mediastinal lesion. Minimal invasive surgeries are alternative to open in certain cases and offer less post-operative pain, less atelectasis and shorter hospital stay, but uses of minimal invasive surgery precludes palpation of the lesion, increase risk of tumor rupture and tumor port site recurrence (11-14). Children especially those with benign tumors have very high survival rate after the surgical resection (15).

The most important factor in the management of infant or child with mediastinal mass are nature of the disease, age, presenting symptoms and location of the mass. Symptom of primary mediastinal tumor may vary from patient to patient and usually depends on its anatomic location, size and nature. According to reports from Turkey, three-fourth of patient were symptomatic. Respiratory symptoms (cough, stridor, dyspnea) were the commonest presentations that accounts for 60.7% of cases. Most of mediastinal mass located in the middle compartment (51.3%) followed by anterior compartment (27%). The type of tumors were: lymphoma (27%), Neurogenic tumor (21.6%), other cystic lesion (18%), germ cell tumor (13.5%) (7). According to the study done in Minnesota ,72 % of patients had malignant tumors and also 78% of patients under two-years of age with benign mediastinal masses presented with sign and symptom of tracheal compression. The most commonly occurring mediastinal mass (46%) and most common malignant mediastinal tumor (63%) were lymphoma (16). Study done by Walter reed army medical center in Washington shows prevalence of Malignancy increased since 1970 from 7% to 47%, due to increase prevalence of neurogenic tumor in children (17). Reports from Japan comparing clinical spectrum between adult and children showed that prevalence of malignancy in pediatric patient was lower than adult (37% vs 47%) but had higher incidence of respiratory distress (18). In another study done in Turkey, Mediastinal mass is more common in female (59%), malignant mediastinal mass account for71 %. Neurogenic tumor were most common types of mediastinal mass in children and undifferentiated sarcomas was most common middle mediastinal mass (19). In study done at Lahore on pediatrics malignant mediastinal mass, the median age at diagnosis was 7.5 years with male-to-female ratio of 2:1. The commonest presenting complaint was fever (82%), respiratory distress (58%), and lymphadenopathy (51%). Seventy-eight percent patients belonged to lower socio-economic class. Eighty-six percent of patients had delayed presentation to the tertiary care

hospital and the most common reason was delayed diagnosis by the medical professionals (49%). Fifty-one percent patients had weight-for-age less than 5th percentile. Common complications were airway obstruction (35%), pericardial effusion (19.6%), superior vena cava syndrome and gross pleural effusion (13.7% each). Commonest diagnosis was T-cell acute lymphoblastic leukemia (35%) followed by lymphoblastic lymphoma and Hodgkin's lymphoma (15.7% each). Forty-five percent patients expired, 2% defaulted treatment and 5.9% completed treatment; 25% patients were under treatment, 3.9% patients had progressive disease while outcome of 17.6% of patients could not be known. The most significant factor associated with the outcome primary diagnosis ($p<0.001$), delayed presentation ($p=0.007$) and educational status of the family(20).study done at Duke university medical center, primary cyst and neoplasm of mediastinum recent change in clinical presentation, method of diagnosis. Management and result of the 400 patients, 212 were male and 188 were female. Multicenter retrospective study done at Saint John Cancer institute with Los Angeles medical center on Surgical approach to pediatrics mediastinal mass based on imaging characteristics Mediastinal-mass resection was performed in 33 patients. Median tumor size was 6 cm, and 51.5% had anterior mediastinal tumors. The 23 (69.7%) patients who underwent VATS were significantly older (144months vs 32, $P=0.01$) and larger (33.6 kg vs 13.8 $P=0.03$). Preoperative-imaging characteristics in VATS included “well circumscribed”, “smooth margins” and “cystic”, while the open surgery group were “heterogeneous” and “coarse calcification”. The open group had more germ cell tumors (60.0% vs 13.0%, $P=0.16$) but no difference in malignancy. VATS patients had shorter LOS (2 days vs 6.5, $P=0.24$). Readmission, complication and mortality rates were similar (21).

Diagnosis and Managing patients with mediastinal mass is often challenging because of nonspecific clinical manifestation, it's divergent histopathological and radiological characteristics. nature of disease, clinical presentation, Imaging characteristics and complication of mediastinal mass in pediatrics age groups are also different from adult population. There is no enough data regarding pediatrics mediastinal mass and there is no published data regarding the pediatrics mediastinal mass outcome in our institution as far as the knowledge of the investigators this study will be the first in its type to assess the socio-demographic, clinical and treatment pattern and outcome of pediatric m The purpose of study is to assess our institutional Experience on the patterns of primary mediastinal Mass in children over five year period .understanding of the

Treatment outcome and associated factors including Epidemiological profile ,location of tumor, clinical manifestation will help to avoid delay in diagnosis ,to decease complication rate and subsequently to improve the survival of the patients .There is No single study on pediatrics mediastinal mass in our set up as well as nation wide ,this study will help us a mark for further large scale study Mediastinal mass .

2 OBJECTIVES

2.1 General objective

- ToStudypatternsand outcome of Mediastinal masses in children operated at TASH, Addis Ababa, Ethiopia, from August 1,2020 to August 30 ,2025.

2.2 Specific objectives

- ToDescribeSocio-demographic, Imaging and Histopathologic patterns of Surgically treated Pediatric mediastinal mass.
- To assess the treatment outcome for a Surgically treated pediatric mediastinal mass

3 METHODS AND MATERIALS

3.1 Study design

Institutionbased retrospective cross-sectional study will be conducted at TASH, Addis Ababa Ethiopia among children who were operated with the diagnosis of primary Mediastinal mass.

3.2 Study area and periods

Thestudy willbe conductedin TASH on children operated for mediastinal mass from August 1,2020 to August 30,2025 G.C

3.3 Population

3.3.1 Source population

All children, age less than thirteen, diagnosed and operated for primary mediastinal masses at TASH within the study period.

3.3.2Studypopulation

All children diagnosed and operated for primary mediastinal masses at TASH within the study period which fulfill inclusion criteria.

3.4 Inclusion and exclusion criteria

3.4.1 Inclusion criteria

All infants and children who were operated at pediatric surgery unit with diagnosis of primary mediastinal Mass in the study period with available and complete medical documentation.

3.4.2 ExclusionCriteria

- Patient with above thirteen years of age
- Patient who lost during treatment or follow up period
- Incomplete and chart documentation

- Unavailable medical records
- Patient who does not have diagnostic imaging Modalities

3.5Samplesizedeterminationandsamplingprocedure

Thesamplesizewillbedetermined using the formula:

= ————

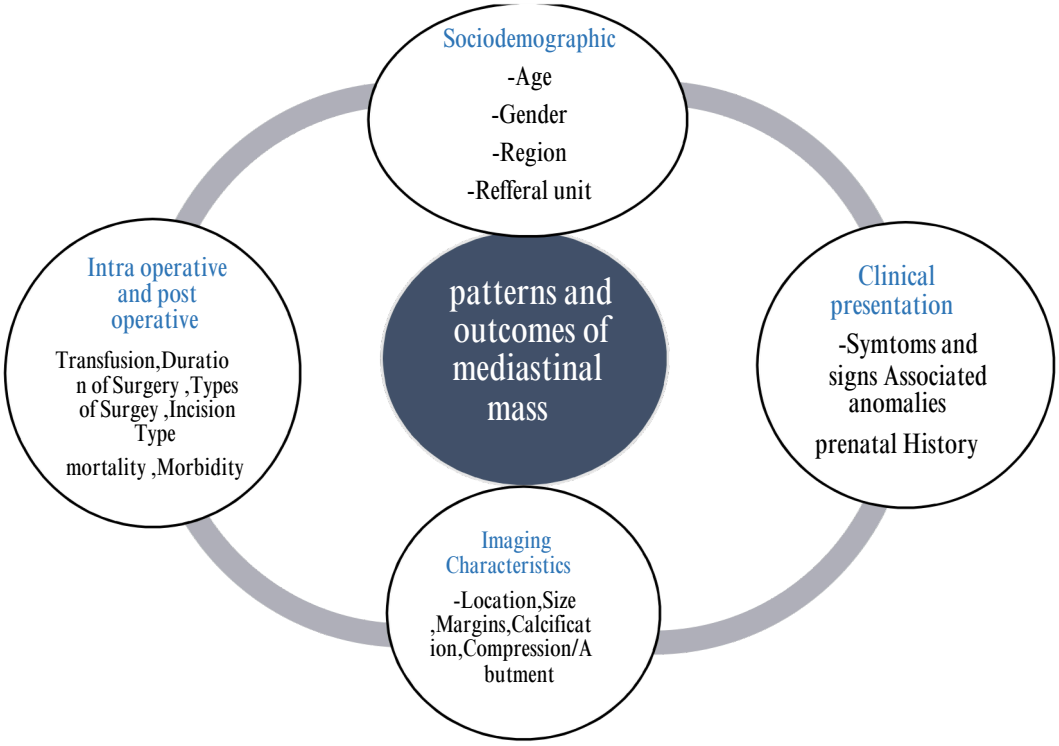
Where*n=desiredsamplesize, Z* $\alpha_{/2}$ *=Z score at d= 95% Confidence level = 1.96,*

P=5o%=0.5q=1-p=0.5, d = degree of confidence =0.05

$$n=\frac{(1.96)^2(0.5)(1-0.0.5)}{(0.05)}$$

Sincethediseaseisrareand such higher number of cases won't be found, we had included all patientsoperatedwiththediagnosis of primary mediastinal Mass in the study period.

3.5 Study Variables



3.7 Operationaldefinition

1.Superior Venacaval Syndrome: Obstruction of venous flow through SVC Characterized by facial and neck edema, dyspnea and distension of neck veins and chest vein.

2.Anemia: Reduced Hemoglobin level below 2.5 centile based up on reference data from healthy children.

3.Malnutrition: Deficiency in Protein energy nutrition including moderate and severe acute malnutrition with mid upper arm circumference less than 12.5 cm, Weight for Height or length Z-Score below -2 and the presence of bilateral pitting edema.

4.Reccurence: When tumor recur back after period of which it was not detected weather at the same place or not.

5. Significant Hypoxia: Oxygen saturation below 80 % and sustained for more than one minute

6.Post-operative respiratory failure: presence of symptom and impaired oxygenation with need for tracheal re-intubation and mechanical ventilation after extubating within 30 days after surgery or mechanical ventilation for more than 24 hours after surgery.

3.8.DatacollectionMethodandtools

Patient demographic, Clinical radiological histological and perioperative information collected. Age, Gender, Address, referral unit presence of symptom, duration of symptom including Shortness of breath, cough, chest pain body weakness chest deformity, incontinence, non-specific symptoms, associated anomalies, preoperative superinfection, Lymphadenopathy, anemia, malnutrition and others patients' preoperative clinical characteristics were collected.

Radiological and Histology reports include mediastinal mass location as an anterior middle and posterior, sizes of the tumor, nature of the tumor weather its heterogeneous, homogenous or cystic, margin of tumor as regular or irregular, presence of calcification, vascular encasement, tracheal compression, and histologically weather benign or malignant.

Intraoperative factors like types of incision ,types of open surgery ,duration of surgery ,intraoperative transfusion intraoperative blood loss and presence of adhesion were included and post-operative outcome including Pulmonary complication(Severe intraoperative Hypoxia in which saturation decreases below 80% and Sustained for more than one minute, Pneumonia, Atelectasis and empyema),Surgery related complication (Vascular injury ,Injury to the thoracic duct ,CSF leak, Esophageal injury) Prolonged ICU Stay, Hospital stay and Mortality included and data were obtained from chart review ,Pathologic data registry and Electronics medical record system.

3.9 Data quality control

Inorderto assuredataquality high emphasis was given to minimize error using the following strategies. The questioner was pretested and subsequent modification was done depending on input from advisor on daily basis. The collected data was reviewed and checked for completeness before data entry

3.10 Data processing and analysis plan

Datafromquestioner wereentered andcleaned using Microsoft excel and then analyzed using the SPSS(IBM)version 26. Mean and standard deviation used for normally distributed data, median and IQR for skewed data. Categoric data presented with frequency and proportion.

3.11. Ethical considerations

Ethicalapproval obtainedfrom Addis Ababa University College of Heath Science research ethics Committee. The study was gathered from medical record of patients and electronic registry. Information collected had no name or identifying information on children. The study insured that all the information obtained remain confidential and was not disclosed to anyone other than the research supervisor .The identifiable detail of the participants children and code was used to maintain anonymity.

3.12. Dissemination plan of results

Finally,the finding willbecommunicated to potential stakeholders: To Tikur Anbessa Specialized Hospital Surgical Department, Addis Ababa University, FMOH, and reader who will be in need of it. It also will be loaded to AAU repository and will be published on reputable journal.

4.RESULT

4.1 Sociodemographic characteristics

Inthestudy period34childrenwiththe diagnosis of primary mediastinal mass undergone Surgical Resection at pediatrics surgical unit of which 27 patients who met inclusion criterion were analyzed. In these children, Primary mediastinal mass was slightly more common in male than female,15(55.6 %) of whom were male with Male to female Ratio 1.25:1. Mean age of all patient at presentation is 3.53 years. Male patient present earlier than female with Mean age of presentation for male 3.09 years and for female four years. Majority,15(55.6 %) of patients were beyond one year of age at time of presentation .Most of them were from Oromia region 11(40.7 %) and Addis Ababa 8(29.6 %) and The remaining 29.6% patients came from different regions of the country including Amhara regional state, Somalia regional state, Southern regional states and Tigray regional states. Most of the patients referred from Specialized referral/Teaching hospitals and General Hospitals. Out of 88 % of Referred patients 11(40.7 %) referred from

specialized referral center and 1140.7 %) referred from General Hospitals and only 3(11.1 %)

patients referred from private Unit. Most common reason for referral was Lack of Adequate Set

up and Socioeconomic status in Government and Private Hospital respectively (Table 1).

4.2. Clinical Characteristics

In this study 96 % of the patient were Symptomatic and they have at least one of the clinical symptoms. Difficulty of breathing was the commonest symptom 81.5 % followed by cough 63%. According to this study Most common sign of primary mediastinal mass in children is decreased air entry up on the first evaluation 85.2 % (23). Others 6(22.2%) and 4(14.8%) had Malnutrition and Anemia respectively (Table 2).Associated anomalies present in 18.5 % of the patients and the other 81.5% of patients with mediastinal mass were isolated and does not have any associated anomalies ,common associated anomalies were Vertebral anomalies ,Duplication cyst and Renal anomalies .Associated anomalies are four times more common in male than female. Most of our cases diagnosed postnatal and only 14.8% diagnosed prenatally with prenatal ultrasound and one of the patients undergone prenatal intervention with cyst aspiration (Table 2).

Table 1. *Sociodemographic Characteristics*

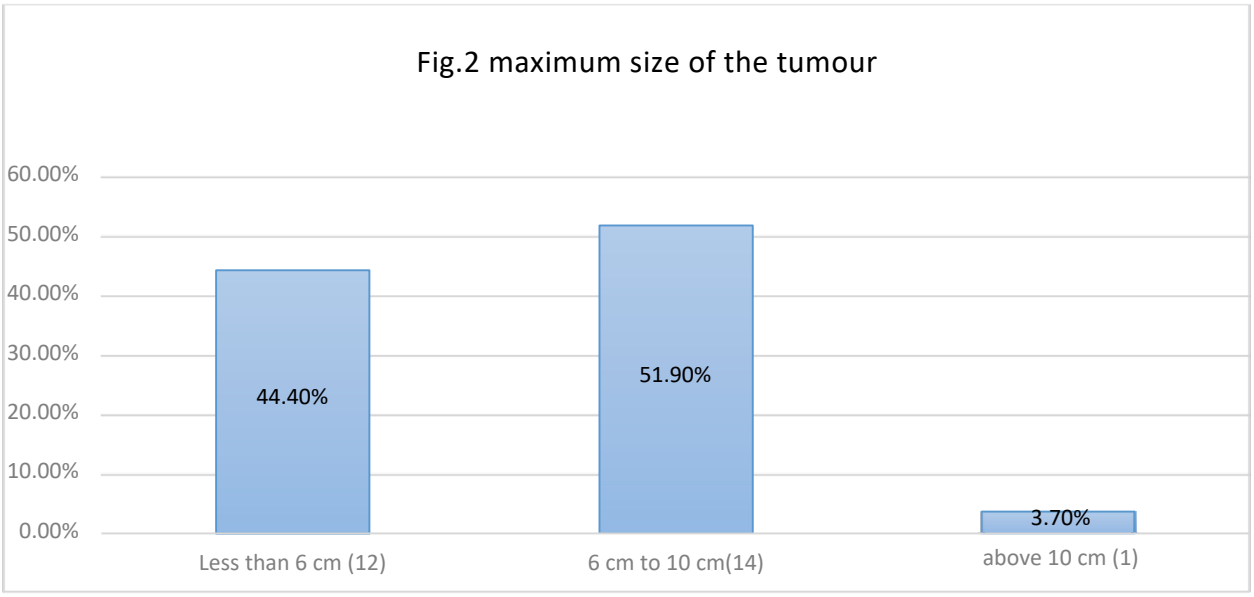
Characteristics	Frequency (N=27)	Percentage (%)
Gender		
Male	15	55.6%
Female	12	44.4%
Age		
Less than 1 month	5	18.5%
1month to 1 year	7	25.9%
1year to 5 Year	9	33.3%
5year to 10 year	4	14.8%
Above 10 years	2	7.4%
Address		
Oromia State	11	40.7%
Addis Ababa	8	29.6%
Amhara Regional state	4	14.8%
Somalia	2	7.4%
SNNP	1	3.7%
Other	1	3.7%
Referral Unit		
Referral Hospital	11	40.7%
District Hospital	11	40.7%
Primary Hospital	1	3.7%
Private Hospital	1	3.7%
No Referral	3	11.1%

Table.2 *Clinical Presentation of primary mediastinal mass*

Clinical Signs and Symptoms		Frequency	Percentage
Difficulty of Breathing		22	81.5%
Cough		17	63%
Chest pain		7	25.9%
Weakness		1	3.7%
Bladder or Bowel incontinence		1	3.7%
Nonspecific Symptoms		16	59.3%
SVC Syndrome		1	3.7%
Decreased air entry		23	85.2%
Respiratory Distress		12	44.4 %
Sternal Bulging		1	3.7 %
Malnutrition		6	22.2%
Anemia		4	14.8%
LAP		1	3.7 %
Associated Anomalies	Scoliosis	2	7.4%
	Solitary kidney	1	3.7%
	Duplication cyst	1	3.7%
	Others	1	3.7%
Prenatal Diagnosis		4	14.8%
Prenatal intervention		1	3.7 %

4.3 Radiologic and Histologic characteristics

In the study all of our cases had CT scan preoperatively and MRI done additionally for 3 patients. According to cross-sectional imaging modality description ,12 (44.4 %) had mediastinal mass less than 6 cm in its maximum diameter, with median size of the mass 6.7 cm (Fig 2).



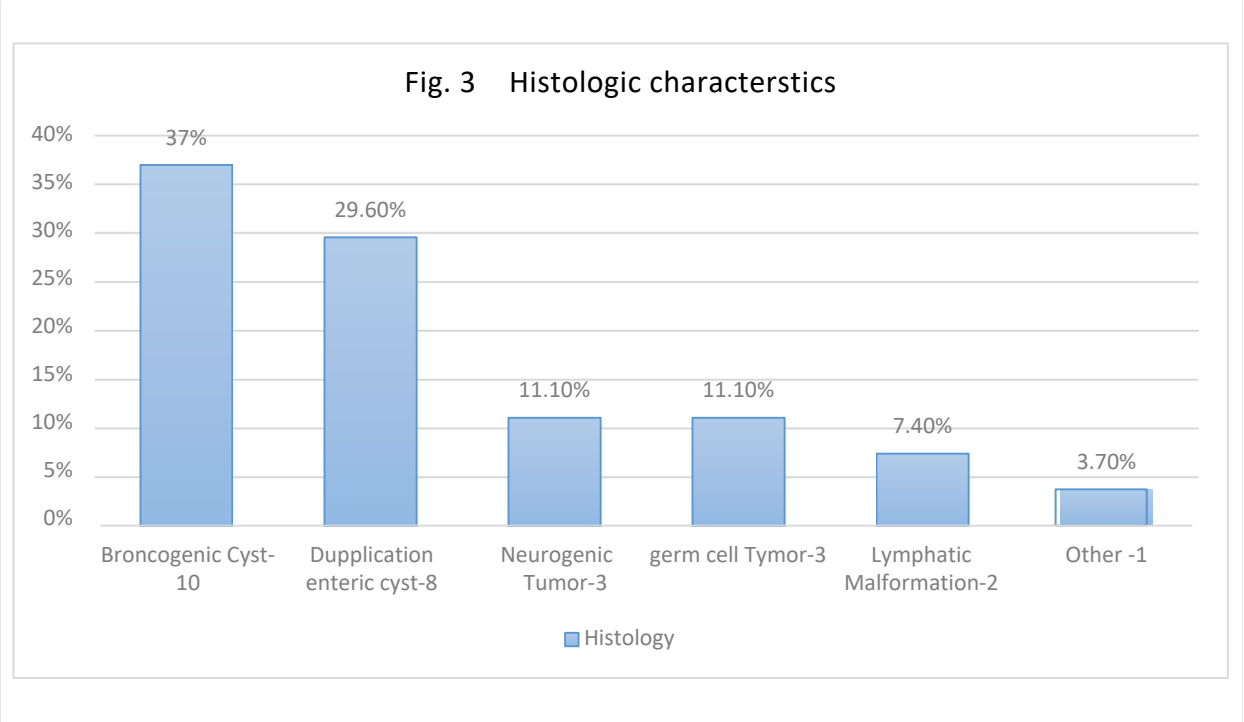
The most common locations of tumor were posterior mediastinum (51.9 %), Middle mediastinum (33.3 %), and anterior mediastinum (14.8 %). Neurogenic Sign and symptoms are exclusively associated with Posterior mediastinal mass and all of the patient with anterior mediastinal mass diagnosed beyond neonatal age. 25.9 % of mediastinal mass were heterogeneous and the rest were homogenous and cystic mass of which 33.3 % of the mass had vascular compression ,11.1 % with tracheal compression and 18.5 % demonstrated calcification (Table3).

Table 3 *Radiologic Feature of Pediatrics Mediastinal Mass*

Imaging Feature	Yes (n/%)	No(n/%)
Tracheal Compression/Abutment	3 (11.1%)	24 (88.9%)
Vascular Compression/Abutment/encasement	9 (33.3%)	18(66.7%)
Presence of Calcification	5 (18.5%)	22(81.5%)
Have Distinct Margin	18 (66.7%)	9(33.3%)
Heterogeneous	7 (25.9%)	20(74.1%)

Based on histologic feature Bronchogenic cyst (37 %) were the commonest histologic type followed by Duplication enteric cyst (29.6 %) and others Neurogenic tumor (11.1%), Germ cell tumor (11.1%) lymphatic malformation (7.4 %) and other (3.7%). Common location for Duplication cyst and Bronchogenic cyst were Posterior mediastinum and middle mediastinum respectively. In this study all neurogenic tumors and Germ cell tumors originate from Posterior

and Anterior mediastinum. 80 % of associated anomalies were associated with cystic type of primary mediastinal mass (Fig.3).



4.4.PerioperativeFindingsandComplications

Complete Excision undergone for 20 (74.1%), and debunking (11.1%), excision and mucosal striping(7.4 %) and open biopsy (7.4 %).Type of thoracic incision done was right and left posterolateral thoracotomy (88.9 %), Anterior thoracotomy (3.7 %), Axillary thoracotomy (3.7 %), and others including neck incision (3.7%). Intraoperative transfusion required for 14.8 % and two of the patients had blood loss of beyond 300 cc. 11.1% required mechanical ventilation post operatively and operation time were prolonged beyond 150 minutes in five (16.5%) of the cases.

Perioperative complication rate was 37 % and mortality rate accounts 14.8 %. Most common complication accounts for pulmonary complication 25.9% including intraoperative hypoxia, pneumonia, atelectasis, respiratory failure and empyema. Other intra operative major vascular injury (7.4%), thoracic duct injury (3.7 %), CSF leak (3.7 %), esophageal injury (3.7%). No recurrence after complete surgical excision. 14.8 % of patients whom undergone surgical procedures had hospital stay beyond 3 weeks. Pulmonary complication is the most complications detected perioperatively including severe intra operative Hypoxia, Pneumonia, Empyema and

thoracic post-operative respiratory failure accounts (25.9 %.). Most common pulmonary complication was post-operative pneumonia accounts (18.5 %) (Table 4).

Table 4-*Perioperative Complications*

Complications	Complications	Frequency(n)	Percentage (%)
Pulmonary Complications	Pneumonia	5	18.5%
	Empyema	1	3.7%
	Respiratory Failure	2	7.4%
	Intra op Significant Hypoxia	1	3.7%
Complication Associated with Mediastinal structure	Injury to the Major vessel	1	3.7%
	Thoracic duct injury	1	3.7%
	Esophageal injury	1	3.7%
Other complications	CSF leak	1	3.7%
	Severe Drug Reaction	1	3.7%
	Prolonged ICU stay	3	11.1%
	Prolonged Hospital stay	4	14.8%
	Prolonged Surgical time	5	18.5%
	Recurrence rate	0	0

5. DISCUSSION

Mostof the study's done on pediatrics mediastinal mass specifically on the outcome of pediatrics primary mediastinal mass is limited to the specific compartments or specific histologic types, like most of the published studies focus on anterior compartment, Malignant types of pediatric mediastinal mass or only includes Neurogenic tumor and Germ cell tumors. Hence comparing our study with the previously studied data's and conclude on the outcome of pediatrics mediastinal mass might be difficult and limited. Other limitation of this study was its limited sample size and retrospective nature of the study.

In our study, Pediatrics primary mediastinal mass that undergone surgical procedures was slightly more common in male than female with the median age of 3.53. This study is similar with study done in Egypt and Japan(18,20).The study done in china shows that three-fourth of pediatrics mediastinal tumor is occur in male , which alien with our study and the median age of diagnosis was 13 years completely contradicting ours finding (22). On the other study done in Turkey shows that Pediatrics mediastinal mass is more common in female (59 %) than male and median age was 3.8 years old which relatively older than children in our study(19). The difference on demographic characteristic might be due to different geographic distribution, difference in age distribution and difference based on inclusion and Exclusion criteria's as they included age less than 18 years and also included medically only managed pediatrics mediastinal mass including lymphoma .

In our study all of the patients were symptomatic and most common presenting symptoms and Sign of pediatrics mediastinal mass is Shortness of breath /Fast breathing and Decreased air entry respectively. This clinical characteristics is similar with study done in china(22) which shows that shortness of breath , cough and is more prevalent in pediatric patients than in adult .

In our studies most common location of mediastinal mass was posterior mediastinum and malignant tumor accounts only 7.4 %.Our study shows that prevalence of malignancy in pediatrics mediastinal mass is significantly lower. Most common histologic types of mediastinal mass are Cystic type ,Bronchogenic Cyst and Esophageal duplication cyst .our study is relatively comparable with some of the data's of study done in Japan, clinical spectrum of primary

mediastinal tumor comparison of adults and pediatrics population(5) in which the most common location of mediastinal mass in children was posterior compartment that accounts 52 % and prevalence of malignancy was lower in pediatrics than adult ,$P<0.005$,whereas most of the studies done on pediatrics mediastinal mass shows that malignant tumor more common than benign types of tumor . Study done in china shows that malignant tumor is nine times more common than Benign and Neurogenic and germ cell tumors were the most common type (6). This difference on The Radiologic and histologic type might be explained by difference in age distribution, sample size, Socioeconomic status and geographic distribution. Most of the malignant tumors in developing countries present late and they usually are not amenable to Surgical intervention ...

Regarding perioperative complication, pulmonary complication or complication associated with injury to local structures, most of them were pulmonary complication (25 %). Pneumonia was commonest and accounts 18.5% and the overall perioperative complication rate was 34.4%.. According to the study done in china, the incidence of perioperative pulmonary complication was 26 % and post-operative pneumonia was most common complications (22). in this study intra operative transfusion was the independent risk factor for the perioperative pulmonary complication which is similar with our studies but the study shows that in addition to intraoperative transfusion ,Malignant nature of tumor ,Anterior mediastinum ,increased tumor volume and longer operation were associated with perioperative pulmonary complication .the difference might be explained by difference in sample size.

Another study done in Egypt on surgical management of mediastinal cyst studied only on benign lesion perioperative complication were only 7%(23). And the incidence of complication after resection of mediastinal cyst reported in few case report and small case series was 2-7% which is lower than our study and can be explained by the types of cases involved in the study and might be due to difference in peri-operative care and intraoperative management of the patient .

In our study overall mortality is 14.8 % ..Study done in china mortality rate accounts of 40 % (6), which is higher than our study and can be explained by presence of higher proportion 90% of malignant tumor in this study . study done Egypt (23) on surgical management of mediastinal cyst mortality rate were 0% which is significantly lower than our study and can be explained by difference in age distribution ,types of the mediastinal masses involved and patients preoperative care and intraoperative management protocols.

6. CONCLUSION

Primary mediastinalmass is slightly more common in male with mean age at presentation of 3.53 years .96 %of the patients were symptomatic and difficulty of breathing were the commonest presenting symptoms ,median size of the mediastinal mass is 6.7 cm and posterior mediastinum is the most common location of the mass. Benign cystic mass and tumor is 12 times more common than malignant mediastinal mass.

Perioperative complications is common after resection of mediastinal mass in children including pulmonary complication ,mediastinal structure injury, Drug related complication ,SSI and Death.

7. RECOMMENDATION

Thisstudy is retrospectivestudy and has its own limitations further prospective studies are necessary for conclusion and accuracy .this study findings will be a mark for further large scale studies on pediatrics mediastinal masses. Perioperative complications will affect duration of mechanical ventilation, ICU Stay, Prolonged hospital stay and post operative patients recovery . Identifying associated preventable perioperative factors is important to anticipate and prevent possible perioperative complications. Attention should be made to preoperative preparation, intraoperative management and detail surgical plan and protocol should be developed Other numbers of study shows that Minimal invasive surgery is possible alternative to open mediastinal mass resection and it has shorter hospital stay with minimal morbidity so our institution has to apply this different techniques of minimal invasive surgical intervention.

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ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDICINE
RESEARCH ETHICS COMMITTEE (REC)

Departmental Research Ethics Committee's Decision

Meeting No: - DoS/RE-C/184/25/18 Date: -
Protocol number:

Protocol Title: PATTERN AND OUTCOME OF MEDIASTINAL MASSES IN CHILDREN OPERATED AT TIKUR ANBESSA SPECIALIZED TEACHING HOSPITAL,ADDIS ABABA, ETHIOPIA:TEN YEARS EXPERIENCE

Principal Investigator:	Dr. Abebe Tsegaye
Department	Department of surgery
Elements Reviewed (Protocol):	☐ Attached ☐ Not Attached
Review of Revised Application ☐ Yes ☐ No	Date of Previous review: May 14,2024
Decision of the meeting:	☐ Approved ☐ Approved with Recommendation ☐ Resubmission ☐ Disapproved

I. Elements approved-
1. Protocol Version No: **1**
2. Protocol Version Date: **March 1 ,2025**
3. Informed consent Version No: **1**
4. Informed consent Version Date: **March 1 ,2025**

II. Obligations of the PI-
1. Should comply with the standard international & national scientific and ethical guidelines
2. All amendments and changes made in protocol and consent form needs ethics committee approval
3. End of the study, including manuscripts and thesis works should be reported to the REC

III. To CHS IRB ☐

Departmental Research Ethics Committee's Approval Period from: _____ to _____

Follow up report expected in
3 Months___ 6 Months_____ 9 Months_____ one-year__X_____

Chairperson, Research Ethics committee's
(Name)__Dr.Tsegazeab Laeke_____

Signature: _____

Head Department of Surgical
Name: - Dr Seyoum Kassa Merine

Signature: _____

PATTERN AND OUTCOME OF MEDIASTINAL MASSES IN CHILDREN OPERATED AT TIKUR ANBESSA SPECIALIZED TEACHING HOSPITAL, ADDIS ABEBA, ETHIOPIA:FIVE YEARS EXPERIENCE

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