

Radiological Evaluation of Mediastinal lymphadenopathy and Masses**Feryal Gorieh***

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Abstract**Background**

Mediastinal masses and nodes are considered frequent pathological lesions in most countries of the world, especially Syria, and because they cause clinical symptoms ranging from mild to severe, they are diagnosed qualitatively with simple radiography and computed tomography. This study aims to study the role of radiological, laboratory and clinical diagnostic methods in detecting Mediastinal nodes and masses for better placement a treatment plan to achieve optimal recovery.

Methods and Materials

From the archives of patients at Al-Mowasat University Hospital, cases of diagnosed mediastinal nodes and masses were monitored in the Radiology Division and the Thoracic Internal Medicine Division, and the cases were followed up and managed in the Thoracic Surgery Division in the hospital within the period extending from 3/19/2023 to 8/2/2023, with reference to the Division's archives. Radiology available on the PAX network, and analysis of simple radiographs and CT scans.

The study included 456 patients, 105 cases of intramediastinal masses, and 351 cases of lymph nodes. Most of the mediastinal masses were primary (23%), the percentage of lymph nodes was (77%), the percentage of anterior mediastinal masses was (62%), and the percentage of middle mediastinal masses was (25%). , the percentage of posterior mediastinal masses (13%), the percentage of cases that enhance contrast material (52%), the percentage of cough (50%), stridor (13%), tracheal deviated (5%), and the percentage of inferior vena cava syndrome (3%) , chest pain (30%), pleural effusion (20%), dysphagia (10%), Horner syndrome (3%), hoarseness, fever, and myalgia (3%), (4%), and (6%) on straight.

Conclusion

The radiological gold standard for evaluating and detecting mediastinal masses is CT before and after injection. Each mediastinal mass is studied by CT before and after injection.

Keywords: Mediastinal Masses, Lymph Nodes, Mowasat Hospital, Radiological Evaluation

1. Introduction

The thoracic mediastinum is divided into: anterior mediastinum, middle mediastinum, and posterior mediastinum, The anterior mediastinal nodes are divided into: internal mammary nodes, paracardiac nodes (diaphragm and pericardium), and anterior vascular nodes, The middle mediastinal nodes are divided into: pretracheal and paratracheal nodes, aortopulmonary nodes, subsplural nodes, and peribronchial nodes, Posterior mediastinal nodes are divided into: esophageal nodes, lower pulmonary nodes, and vertebral nodes, Locations of the lymph nodes: the upper region, the aortopulmonary region, the infrasingular region, the lower region.

The umbilical lymph nodes and the peribronchial nodes also represent two additional groups, Measuring the size of the lymph node: the short axis or the smallest diameter (the diameter of the node seen in the cross section) and we use it when measuring the size of the lymph node, Lymphadenopathy: Lymph nodes are considered enlarged if the short axis of the node's diameter is greater than 1 cm, except for the infraspurated nodes in most cases, which are visible even though adipose tissue surrounds them. As for enlarged mediastinal lymph nodes larger than 2 cm, they are often tumorous infiltrations, the affected nodes are often enlarged, but they can also be of normal size. Most of the multiple lymph nodes are calcified,

and lymph node calcification usually indicates previous granulomatous disease, Normal lymph nodes may show some increase in density after intravenous contrast injection, while pathological, highly vascularized lymph nodes may increase their density significantly, Differential diagnosis of mediastinal lymphadenopathy: lung cancer, lymphoma, leukemia, Hodgkin's disease (HD), non-Hodgkin's lymphoma (NHL), metastases, infections, Classification of mediastinal masses: prevascular space masses, germ cell tumors, thyroid masses, lymphomas (hygromas), lipomas, lipomas, aortopulmonary window space, infrasuppurative space, vertebral side space, The anterior mediastinal lymph nodes and thymus gland are enlarged in more than half of patients with HD, Teratomas are histologically classified as mature or immature. Mature teratomas are benign, while immature teratomas are usually malignant in adults, but may be benign in children, Seminoma occurs more frequently in young people, and it is the most common malignant germ cell tumor in the mediastinum, as it represents 30% of germ cell tumors, Bronchogenic cysts result from abnormal transformation of the foregut during development.

They are most commonly seen in the infrasuppurative space but can be seen in any part of the mediastinum, Neuroblastomas are divided into three groups resulting from (1) peripheral nerves, (2) sympathetic ganglia, and (3) paraganglionic cells, Bleeding is due to rupture of mediastinal veins and arteries, and bleeding in the mediastinum is seen on high-density computed tomography (> 50 units), Classification of mediastinal masses according to the Radiological Society of America (RSNA): high-density masses, hypo-density masses.

2. Methods and Material

2.1. Aims and Studying

Mediastinal masses and nodes are considered frequent pathological lesions in most countries of the world, especially Syria, and because they cause clinical symptoms ranging from mild to severe, they are diagnosed qualitatively with simple radiography and computed tomography.

2.2. Study Design

A cross-sectional study to Study of the radiographic shapes and distribution ratios of mediastinal nodes and masses in patients at Mouwasat University Hospital, along with a study of the clinical symptoms in both cases.

2.3. Patients

The study included 465 male and female patients who were admitted to Al- Mouwasat University Hospital and they had a mediastinal mass.

2.4. Place of Study

Al- Mouwasat University Hospital - archives and records of patients in the internal department, clinics, and radiology department.

2.5. Study Time

From 3/19/2023 until 8/2/2023

3. Methods

A group of patients who were admitted to Al- Mouwasat University Hospital were studied according to the following Inclusion criteria.

1. Cases of diagnosed mediastinal nodes and masses were monitored in the Radiology Department and the Internal Thoracic Department, and the cases were followed up and managed in the Thoracic Surgery Department in the hospital.

2. Accept patients with symptoms and signs suggesting a diagnosis of with mediastinal masses While the exclusion criteria were as follows:

1. Patients who continued treatment outside the hospital.
2. Patients who had X-ray and CT outside the hospital.
3. Patients who do not have a desire for diagnosis and treatment.
4. Damaged patient records and records in which there is insufficient information to serve our study.

Information was collected according to the research form to adjust the inclusion and exclusion criteria. Clinical history information was recorded in detail, which included: age, sex, habits, vital signs, and medical examinations. Information was taken about the results of the CT scan and the plain radiograph. All patient measurements were made using devices available in the hospital, and X-rays were taken at the center located in the hospital

4. Ethical Considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of the Faculty of Medicine, Al-Sham Private University, and Al-Mowasat University Hospital in Damascus.

5. Results

The study included 456 patients during the month of March to August. The cases were limited to mediastinal masses (105 cases) and phlegmatic nodes (351 cases), The mediastinal masses, most of which were primary, were (105) out of (456), and the percentage was (23%), as were the phlegmatic nodes (351), out of 456, and the percentage was (77%), Confirmed radiological diagnosis by computed tomography was adopted for all cases and simple images, and technically bad images were excluded (chest imaging positions were posterior, anterior and lateral), The number of cases in which chest x-rays were performed and there was suspicion of a mediastinal mass or phlegm nodule enlargement (456), out of (456) cases. Left lateral chest x-rays (225) and right lateral chest x-rays (231) were performed, the presence on the simple pictures was large (100%), A CT scan of the chest and a mediastinal window was performed before and after the injection to confirm what was discovered on the simple image, measure the density of the mediastinal masses, determine their components, and confirm the diagnosis.

Mestinal masses (105) cases that appeared on simple images and were confirmed by CT: Cases of anterior mediastinal masses (65 cases) and percentage (62%), Cases of mediastinal masses (26 cases) and percentage (25%), Cases of posterior mediastinal masses (14 cases) and percentage (13%), Injection was performed on CT scan for all cases of mediastinal masses, The number of cases that enhance contrast material (55 cases) and the percentage (52%). The number of cases that do not enhance contrast material and the percentage (48%), Study of

clinical symptoms and signs among patients: cough (50%), bedsores (13%), tracheal exudation (5%), inferior vena cava syndrome (3%), chest pain (30%), pleural effusion (20%), Dysphagia (10%), Horner syndrome (3%), hoarseness (3%), fever (4%), myalgia (6%), Thymoma and thymic cysts (25%), germ cell tumors (15%), including benign, malignant and Dermoid tumors, thyroid lesions and masses (10%), parathyroid (10%) lymphomas (30%), lipomas (10%), Middle mediastinal lesions that occupy 30% of mediastinal masses: pericardial cysts (20%), lymphoma (65%), Nerve masses: schwannoma (60%), normoma (10%), ganglioma (10%), neuroblastoma (5%), paraganglioma (5%).

Digestive masses: Duplicated digestive cysts (23%), Mediastinal masses: benign (35%), malignant (65%), Malignant masses included (65%) that were diagnosed by mediastinal biopsy, and a percentage of (30%) (65%) were diagnosed with PET-CT, Cystic masses were classified based on the density of the cyst fluid (0 to 25 Hounsfield units) and spread throughout most of the layers of the mediastinum: pericardial cysts (55%), bronchial cysts (22%), gastrointestinal cysts (15%), and pseudocysts. (8%), The cyst has a clear, homogeneous content (80%) and occluded cysts (20%), Mediastinal phlegmonal nodules: Causes: tuberculosis (7%), histiocytes (3%), metastases and malignancies (21%), lymphoma (66%), sarcoidosis (3%), Pseudomediastinal lesions: aortic aneurysm (15%), cardiac lesions (5%), esophageal tumors (3%), extended retrosternal thyroid commissure (5%), Morgana diaphragmatic hernia (13%), metastases to mediastinal phlegmonal nodes (69%), Cases of mediastinal emphysema (mediastinal wind): Clinically: pain behind the sternum (70%), dyspnea (16%), anxiety and complaining (3%), neck edema extending to the chest (15%), subcutaneous blebs (2%). Subcutaneous emphysema (5%), cyanosis (16%), Classification of mediastinal masses according to the Radiological Society of America (RSNA): High- density mediastinal masses: masses whose density is higher than that of muscle without injections, hypodense mediastinal masses that appear with low attenuation values, their density is less than that of chest wall muscles, hypodense masses (40%) of Masses and high density (60%) of masses, hypodense mediastinal masses, congenital lesions: pericardial cysts (10%), intestinal duplication cysts (10%), thymic cysts (10%), bronchogenic cysts, cystic mediastinal growths: their density is close Of soft tissue density and appears to be deficient due to the presence of neoplastic necrosis (5%), mediastinal neoplastic lesions in the context of treated Hodgkin's disease, phlegmatic nodules appearing in the form of cysts (50%), nerve root tumors such as Schwann sheath tumors (5%), mediastinal lymphangiomas (10%), High-density mediastinal masses: calcifications of mediastinal phlegmon nodules: such as tuberculosis (23%), primitive formations in the mediastinum: such as germinal layer tumors (25%), thyroid commodities (22%), aortic aneurysms (25%), intestinal duplication cysts containing... Calcifications, Mediastinal masses containing fat: mediastinal lipomas (60%), lipomas (20%), teratomas (10%), thymic lipomas (5%), liposarcoma tumors (5%).

6. Discussion

Paying attention to chest complaints and following them up with radiological methods.

- Every chest image that shows density in the anterior-posterior

position must be followed up first in the lateral position (left or right depending on the location of the lesion).

- The radiological gold standard for evaluating and detecting mediastinal masses is computed tomography before and after injection.
- Every mediastinal mass is studied by tomography before and after the injection.
- Performing a radiological reading of mediastinal lesions by an expert and detailing the characteristics of the mediastinal mass.
- Mediastinal nodes in class: require care and monitoring, as they may hide their origin.
- In the case of mediastinal nodes and due to the difficulty of performing the biopsies necessary for diagnosis, we resort to positron imaging (PET-CT).
- Due to the spread of chest masses, including mediastinal masses and nodes: scanning and low-dose computed tomography (CT) devices are available, used in early detection of mediastinal tumors and follow-up and monitoring of mediastinal phlegmatic nodes.

7. Declarations

Consent of Publication

Not applicable.

Availability of Data and Materials

All data related to this paper's conclusion are available and stored by the authors. All data are available from the corresponding author on a reasonable request.

Convict of Interest

The authors declare that they have no conflict of interest.

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Authors Contributions

Feryal Gorieh conceptualized the study and wrote the study protocol, performed the statistical analysis, participated in data collection, and did the literature search. and. participated in the literature search, interpret the results, wrote the main manuscript. Dr. Khalid khattab revised the draft. All authors read and approved the final draft.

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Competing interests: The authors declare no competing interests.

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