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A Case Of Small Cell Carcinoma Of Lung Presenting As Large Anterior Mediastinal Mass

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Abstract:
small cell lung cancer (sclc)is a subtype of bronchogenic carcinoma separated from non-small cell lung cancer (nsclc) as it has a unique presentation, imaging appearances, treatment and prognosis. Sclc are neuroendocrine tumors of the lung that rapidly grow, highly malignant, widely metastasize, and despite showing an initial response to chemotherapy and radiotherapy, they have a poor prognosis and are usually unresectable.
Key words*: immunohistochemistry (ihc), neuroendocrine tumour (net), Nsclc, sclc*

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I. Introduction

Globally lung cancer remains the leading cause of cancer related mortality [1]. Tobacco smoking is still the leading cause of the lung cancer, conferring 20-fold increase in risk and accounting for approximately 90% of all the cases [3]. Sclc is more strongly associated with smoking than any other histological subtypes of lung cancer with only 2% of cases occurring in never smokers. 2021 who classification identifies 3 major types of neuroendocrine tumors (net) – carcinoid tumors, small cell carcinoma and large cell carcinoma. Incidence is about 25% of all primary pulmonary carcinomas, with small-cell carcinoma being the most common (nearly 80% of neuroendocrine tumours) [2].

II. Case report

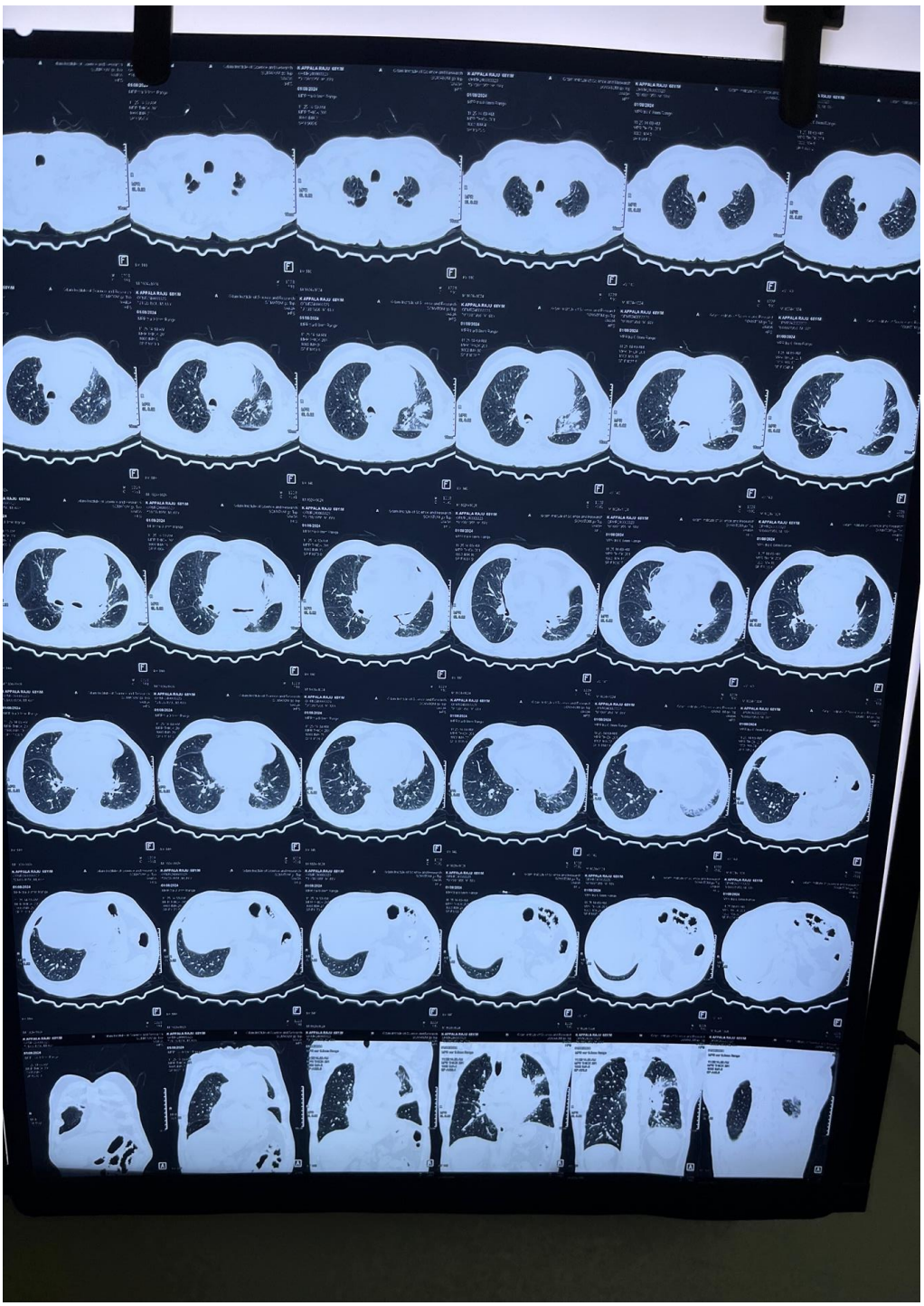
A 68-year-old male patient truck driver by occupation, presented to respiratory medicine outpatient department in gitam institute of medical sciences and research hospital vishakhapatnam on 7/1/24 with chief complaints of difficulty in breathing for 30 days and productive cough for 30 days. Patient was apparently normal 1 month back, later he presented with complaints of difficulty in breathing, insidious onset, gradually progressive from mmrc grade 1 to grade 3 over 30 days. Aggravated on lying in supine position, relieved on sitting position. Mucoid expectoration not associated with any hemoptysis. History of loss of appetite with 4 kgs weight loss in a month. There is no relevant past history. Patient is a hypertensive and type 2 diabetes controlled by medication. Significant cigarette smoking history with 20 pack years and smoking index of 400. General examination revealed grade 3 pandigital clubbing of fingers. Patient is tachypneic with rate of 26/minute. Chest examination revealed contralateral tracheal shift with decreased movements on the left infraclavicular and mammary areas. Correlating the same there is decreased tactile vocal fremitus and direct sternal percussion revealed dull note, indirect percussion revealed dull note in left infraclavicular and left mammary areas. Auscultation revealed diminished breath sounds in the entire left hemithorax with localized wheeze in the left mammary area.

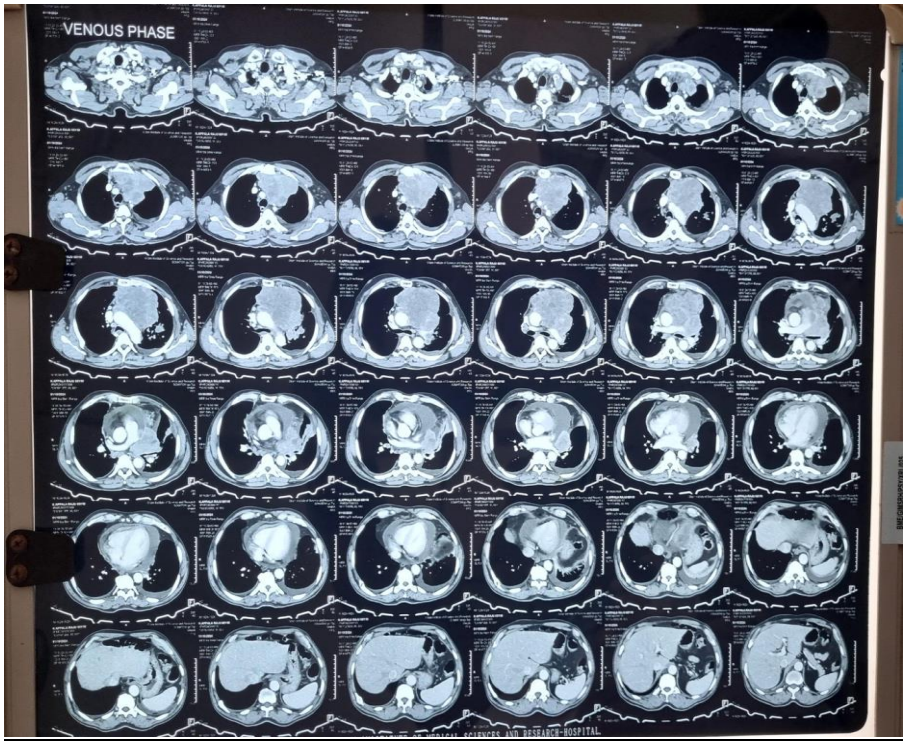
Chest x-ray pa revealed superior mediastinal widening with tracheal shift to right with volume loss on left hemithorax with elevated left hemidiaphragm with enlarged cardiac silhouette

Cbp-leucocytosis 11400/mm^3 with neutrophilia (79%)
Lft and rft – normal range
Serum electrolytes – normal range
Usg abdomen – grade 1 fatty liver

Cect chest revealed a large soft tissue density lesion with lobulated margins with its epicentre in the visceral compartment extending into pre vascular compartment of mediastinum . The lesion is measuring approx. 10.8*9.0*10.9 cm and showing heterogenous contrast enhancement .the lesion is seen abutting and encasing the great vessels .mass effect is seen in the form of deviation of trachea to right , displacement of arch of aorta and its branches , main pulmonary artery and left pulmonary artery posteriorly. Pericardial effusion noted .spiculated mass lesion measuring 3.2*1.9*2.8cm noted in left upper lobe ,pulmonary nodules noted along the oblique fissure on the left upper lobe with adjacent lingula collapse . Emphysematous changes noted bilaterally . Elevated left hemidiaphragm .left mild pleural effusion. A note is made of pre-tracheal, subcarinal and paratracheal lymph nodes

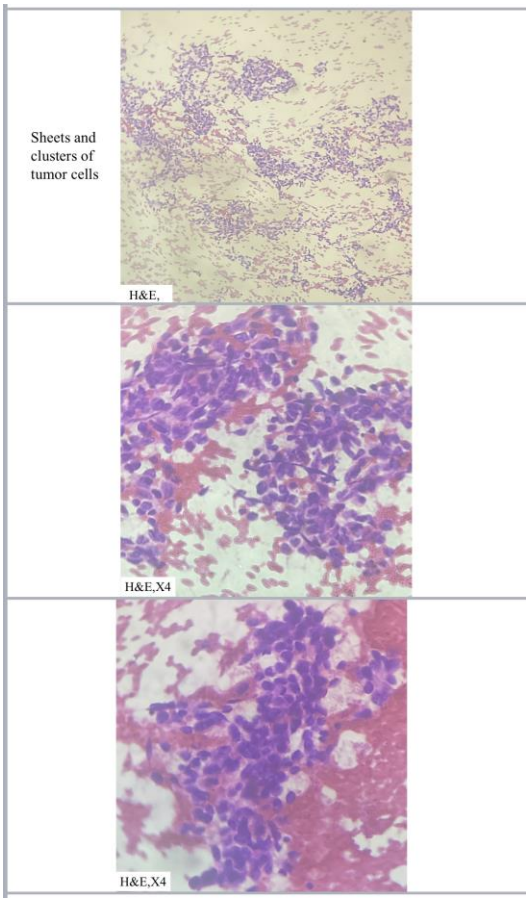
Differntial diagnosis includes thymic neoplasia,lymphoma ,non-teratomatous germ cell tumour, small cell carcinoma

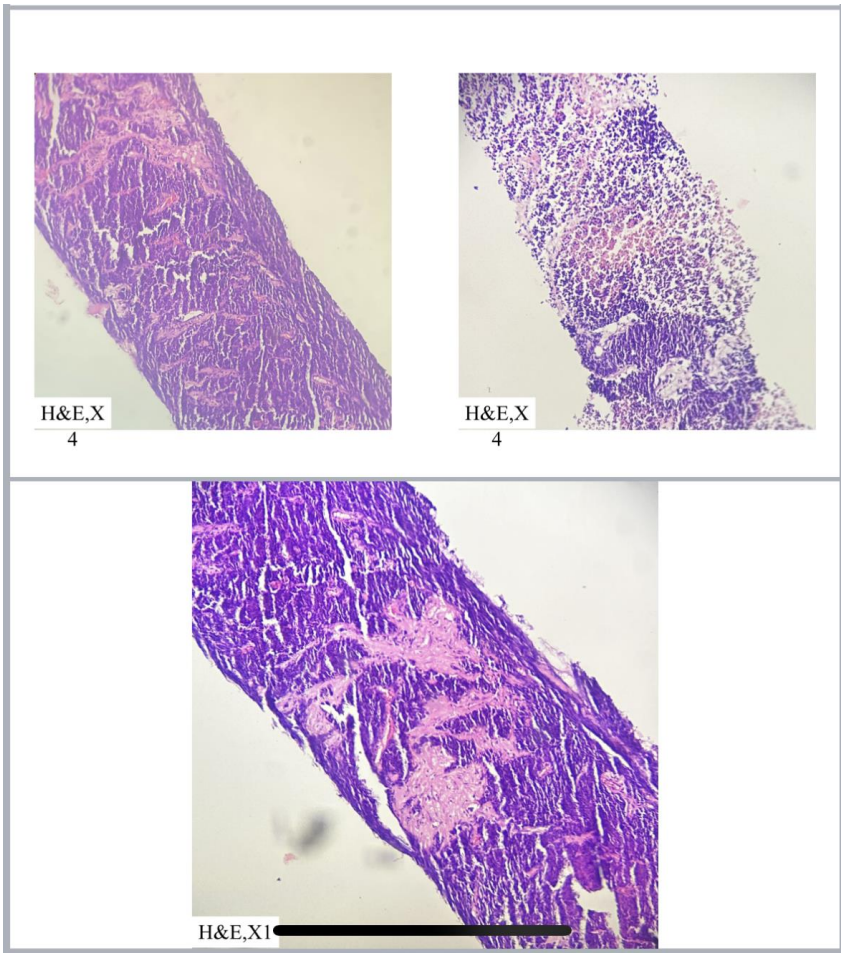




Usg guided core needle biopsy

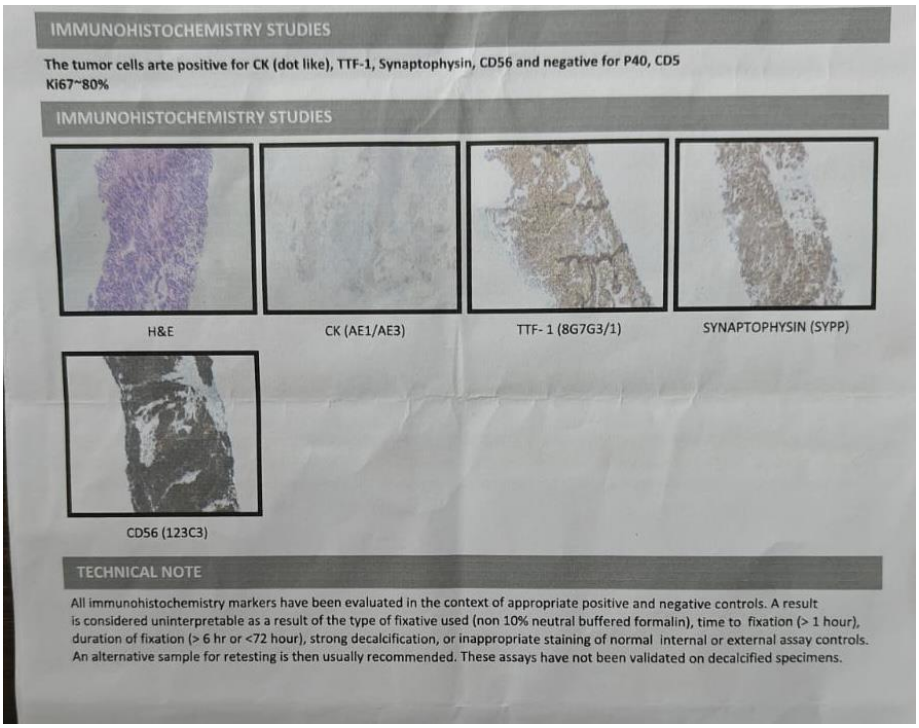
Cytopathology report shows sheets and nests of small round cells with fine chromatin,inconspicious nucleolus and scant cytoplasm. Areas of necrosis are seen suggestive of neoplastic lesion ,probably small cell carcinoma.



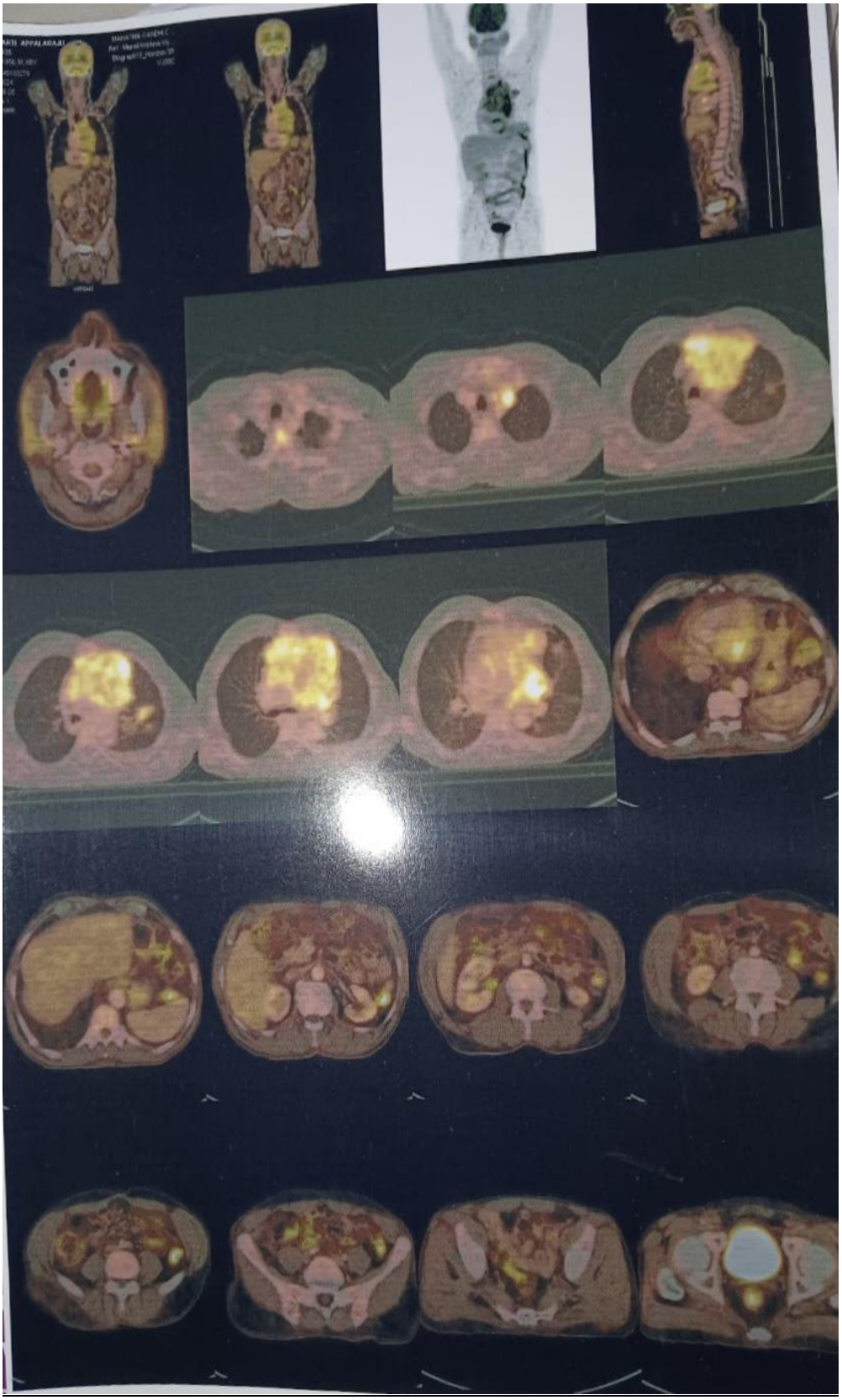


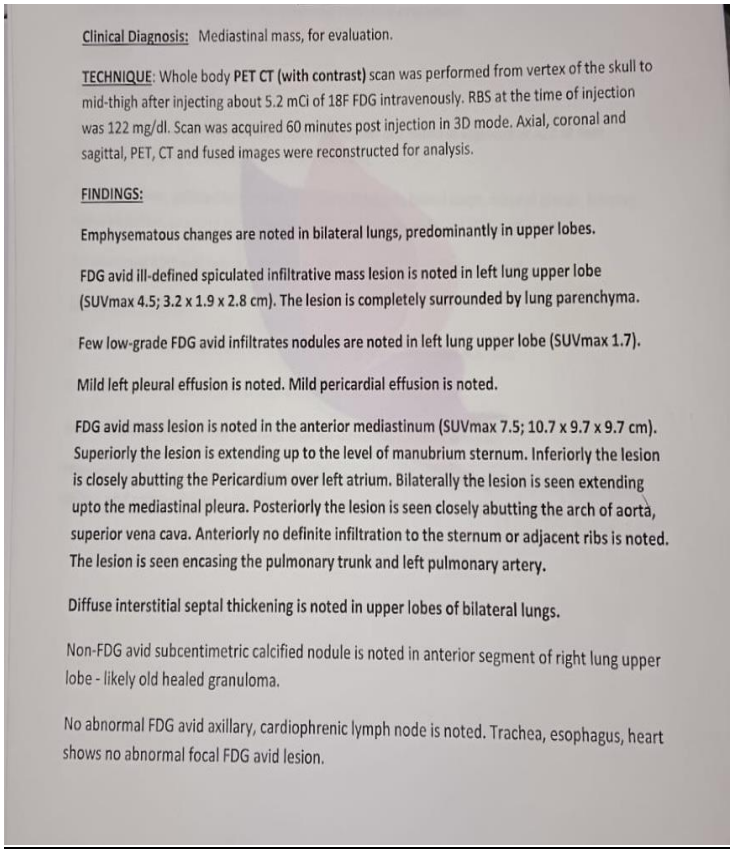
Ihc- tumour cells are positive for ck(dot like), ttf-1, synaptophysin ,cd56 and negative for p40, cd5 ,and ki-67 index 80%

Final diagnosis- small cell carcinoma



After final diagnosis has been made , **18-fdg pet-ct scan** revealed – metabolically active lesions were reported in left upper lobe likely primary neoplastic lesion and metabolically active mass lesion noted in mediastinum with sclerotic lesions in d1,d2 vertebrae suggestive of metastases. Currently patient received two cycles of cisplatin and etoposide and is doing well .





Clinical Diagnosis: Mediastinal mass, for evaluation.

TECHNIQUE: Whole body **PET CT (with contrast)** scan was performed from vertex of the skull to mid-thigh after injecting about 5.2 mCi of 18F FDG intravenously. RBS at the time of injection was 122 mg/dl. Scan was acquired 60 minutes post injection in 3D mode. Axial, coronal and sagittal, PET, CT and fused images were reconstructed for analysis.

FINDINGS:

Emphysematous changes are noted in bilateral lungs, predominantly in upper lobes.

FDG avid ill-defined spiculated infiltrative mass lesion is noted in left lung upper lobe (SUVmax 4.5; 3.2 x 1.9 x 2.8 cm). The lesion is completely surrounded by lung parenchyma.

Few low-grade FDG avid infiltrates nodules are noted in left lung upper lobe (SUVmax 1.7).

Mild left pleural effusion is noted. Mild pericardial effusion is noted.

FDG avid mass lesion is noted in the anterior mediastinum (SUVmax 7.5; 10.7 x 9.7 x 9.7 cm). Superiorly the lesion is extending up to the level of manubrium sternum. Inferiorly the lesion is closely abutting the Pericardium over left atrium. Bilaterally the lesion is seen extending upto the mediastinal pleura. Posteriorly the lesion is seen closely abutting the arch of aorta, superior vena cava. Anteriorly no definite infiltration to the sternum or adjacent ribs is noted. The lesion is seen encasing the pulmonary trunk and left pulmonary artery.

Diffuse interstitial septal thickening is noted in upper lobes of bilateral lungs.

Non-FDG avid subcentimetric calcified nodule is noted in anterior segment of right lung upper lobe - likely old healed granuloma.

No abnormal FDG avid axillary, cardiophrenic lymph node is noted. Trachea, esophagus, heart shows no abnormal focal FDG avid lesion.

III. Discussion

Net's are group of tumours with heterogenous origin that evolve from neuroendocrine cells , with lung being the second target organ after the git tract. In our report the patient is a male with 68 years based on patient age and shorter duration of symptoms , significant smoking history with clubbing and cect findings hpe was done from the mediastinal mass which suggested small cell carcinoma .bronchoscopy could not be done as patient had severe dyspnoea . Ihc was done and came out to be positive for cd56 which is most sensitive marker for small cell carcinoma of lung and synaptophysin which is specific marker for neuroendocrine tumours.

IV. Conclusion

This is a case of small cell carcinoma of lung with small primary lesion in lung presenting as a large anterior mediastinal mass which is a rare presentation. The classical differential diagnosis of anterior mediastinal mass includes 4t's i.e. Terrible lymphoma, thymoma, thyroid mass and teratoma. This case warrants to think beyond while evaluating an anterior mediastinal mass as metastases are also an important differential diagnosis. Timely diagnosis and staging of such masses helps in early initiation of treatment and alleviating patient symptoms.

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