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Case Report

Internal Medicine Section

Large Mediastinal Mass Managed Conservatively in an Elderly Woman

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ABSTRACT

Mediastinal masses have been eluding clinicians for a long time, owing to their common symptoms that are attributable to common infective and non infective aetiologies and their rare incidence. They are generally diagnosed in the anterior mediastinum and include a variety of different entities demonstrating a range of clinicopathologic features. Chest computed tomography is important for the diagnosis, to know the extent of disease and helps in the prognosis. The prognosis of mature teratoma is excellent, surgical removal is curative. This case report was of a 58-year-old female, an unusual age of presentation, diagnosed as benign mature teratoma and was managed conservatively with periodic assessment for symptomatology. A conservative rather than surgical approach was chosen keeping in mind the socio-economic profile of the patient, surgical complications and benign nature of the disease. The uniqueness of present case is hidden behind the unusual presentation of the disease coupled with belonging to an eastern world where surgical modalities are not as accessible and affordable. Hence, a conservative approach might be an equally effective solution, especially considering the age of presentation.

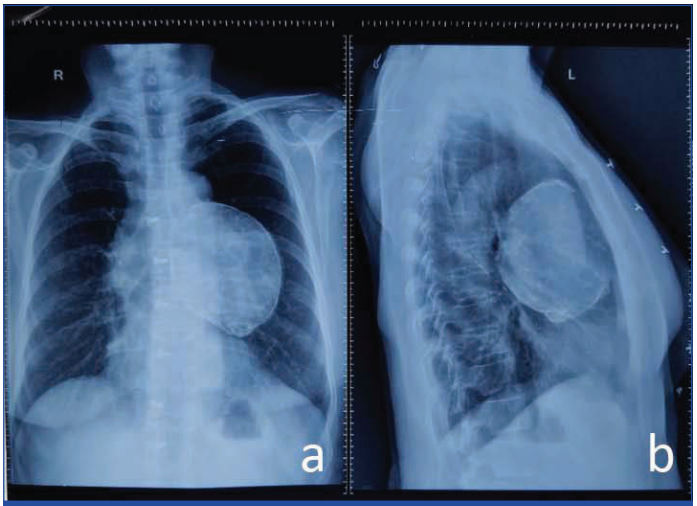
Keywords: Geriatric, Lung mass, Neoplasm, Teratoma, Thoracic cavity

CASE REPORT

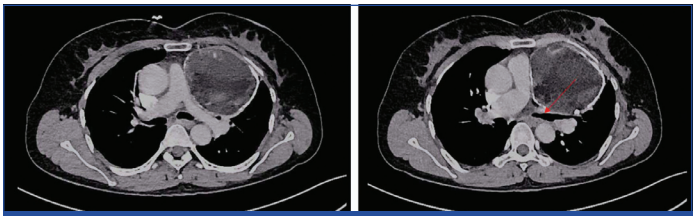
A 58-year-old married female presented to the Outpatient Department of General Medicine with a smoking index of 300 presented with the chief complaints of breathlessness for 2.5 months, Modified Medical Research Council (mMRC) grade I, non progressive, associated with scanty whitish expectoration without any seasonal and diurnal variation, with no history of chest pain, palpitations, orthopnoea, paroxysmal nocturnal dyspnoea and no history suggestive of inhaler use. There was an acute aggravation of productive cough for the last 15 days with yellowish-white expectoration. There is no history suggestive of diurnal or postural variation. She had a single episode of blood-tinged sputum 14 days before hospital admission. There was no history of fever, weight loss, loss of appetite, night sweating, anxiety, palpitations, hoarseness of voice, difficulty in swallowing, jaundice, abdominal distension, pedal edema, or bleeding from any other site. There was no history of any chronic illness or any other addiction. There was no history of contact or exposure Coronavirus Disease (COVID-19) positive patients and tuberculosis patients.

On examination, local and systemic examinations were unremarkable with bilateral normal vesicular sound with no adventitious sound. Routine blood and urine parameters were found within normal limits. Considering the clinical profile, history and examination findings differential diagnosis of infection i.e, community acquired pneumonia, pulmonary tuberculosis, Chronic Obstructive Pulmonary Disease (COPD) and neoplasm i.e, carcinoma lung, anterior mediastinal mass were made.

A chest X-ray showed a well-defined uniform round opacity in the left anterior mediastinum as shown in [Table/Fig-1]. Contrast Enhanced Computed Tomography (CECT) of thorax was suggestive of a well-defined circumscribed round to oval heterogeneous dense lesion measuring approximately 8.4×8.4×10.4 cm with a thick rim of peripheral enhancement on the left side anterior mediastinum with variable attenuation as shown in [Table/Fig-2]. Attenuation was consistent with fat, soft tissue density and calcific components along with some areas of necrosis. Anteriorly and laterally, it was closely abutting adjacent ribs (no erosion) and intercostal muscles, medially abutting the Main Pulmonary Artery (MPA) and left pulmonary trunk and posteriorly abutting the left main bronchus and left superior segment bronchus as shown in [Table/Fig-3,4]. Computed Tomography (CT) findings were consistent with teratoma, probably a mature teratoma. Transabdominal and transvaginal ultrasonography did not detect any intra-abdominal or pelvis mass. The cardiothoracic surgeon advised mass resection for the probable cure and diagnostic confirmation. However, resection could not be done as the patient was not willing for any surgical intervention, owing to poor socio-economic support. She also refused transthoracic Fine Needle Aspiration Cytology (FNAC) and biopsy.



[Table/Fig-1]: a,b) Chest X-ray posteroanterior and a lateral view showing well-defined uniform round opacity in the left anterior mediastinum.



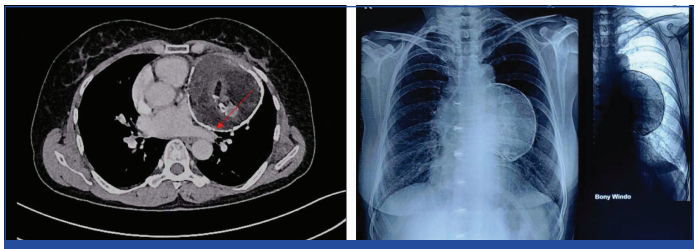
[Table/Fig-2]: Chest CT showing a well-defined circumscribed heterogeneous density lesion in the left anterior mediastinum; with fat, soft tissue density and calcific components within along with areas of necrosis.
[Table/Fig-3]: Chest CT showing mass medially abutting the MPA and left pulmonary trunk with maintained fat planes. (Images from left to right)

European Organisation for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) was used to assess

the quality of life with a functional scale score of 76, Symptoms Scale Score of 10.3, and Global health status/Quality of Life (QoL) score of 33 [1]. The CT was suggestive of probable benign pathology and due to the lack of histopathological diagnosis and poor response of benign teratomas to radiation other treatment modalities were not explored [2].

She was given supportive care under oral co-amoxiclav empirical cover. Her symptoms were improved, coughing decreased with no expectoration. She was discharged in a haemodynamically stable condition with the EORTC QLQ-C30 questionnaire functional scale score of 82, symptoms scale score of 9.2, and global health status/QoL score of 55 after due counselling about the nature of illness and need for regular follow [1]. She was planned to be monitored for symptom's progression, quality of life assessment and chest X-ray.

She was followed-up at 1,3 and 6 months, there was no significant deterioration in the quality of life with an EORTC QLQ-C30 functional scale score of 92, symptoms scale score of 7.6 and global health status/QoL score of 66 with minimal limitation in working capacity, non progressive symptoms, and no significant change in size on chest X-ray as evident in [Table/Fig-5].



[Table/Fig-4]: Chest CT showing mass posteriorly abutting the left main bronchus and left superior segment bronchus with maintained fat planes.
[Table/Fig-5]: Chest X-ray posterior-anterior view and chest X-ray posterior-anterior bone window view after six months showing no significant change in the size of the lesion. (Images from left to right)

DISCUSSION

Mediastinal teratomas are germ cell tumors developed from ectopic pluripotent stem cells that failed to migrate from the yolk sac endoderm. Mediastinal teratomas are remnants of primordial germ cells usually found in the anterior mediastinum, characterising the most common extragonadal germ cell tumors. They account for approximately 15% of anterior mediastinal masses in adults and almost 25% in children. They are the most common mediastinal germ cell tumors, accounting for 50-70% of all [2]. Most of the symptoms are attributable to pressure effects on the adjacent structures.

Histologically teratomas are classified as mature or immature. Chest CT is important for the diagnosis, to know the extent of disease and helps in the prognosis. The prognosis of mature teratoma is excellent, surgical removal is curative [3].

Histologically, they should contain elements from all three embryological layers. However, elements from only two layers are commonly found [4]. They usually occur in gonads, but extragonadal sites are not very uncommon (like mediastinum, pineal area, sacrococcygeal areas) [5]. The high occurrence of germ cell tumors in the mediastinum can be explained by the distribution of fetal germ cell precursors (primordial germ cells) that migrate from the yolk sac endoderm to germinal ridges which virtually extend throughout the axial dimension of the early developing fetus. Some of them may survive the aberrant migration, resulting in germ cell tumors development [5].

Mature teratoma occurring in the mediastinum are benign but have malignant potential. The typical age of presentation is in the 3rd and 4th decades, with a mean age of 28 years [5]. Benign teratoma constitutes <5% of all anterior mediastinal masses above 40 years of age [6]. There is no gender preponderance; however, immature teratomas are seen exclusively in males. This case presents a case of 58-years-old female at the time of presentation which is very unusual for anterior mediastinal mass. Mature teratoma is usually a slow-growing tumor. The majority are located in the anterior compartment (80%) and the remaining involve multiple compartments (13-15%). They are incidentally found on chest X-rays and are normally asymptomatic. About 30-59% of adult mediastinal teratomas are asymptomatic [5]. Symptoms are frequently attributable to mass effects and commonly present with pain (chest back, or shoulder), shortness of breath, cough and fever (due to repeated infections).

Chest CT with intravenous contrast is considered as the investigation of choice as it depicts different tissue attenuations. The CT not only aids in the diagnosis of lesions but also in the staging of the disease process. Specific aetiologies of anterior mediastinal masses may necessitate further imaging testing. All male patients with a mediastinal germ cell tumor should undergo testicular ultrasound as part of a thorough work-up for primary gonadal malignancy. If there is a strong suspicion of non seminomatous germ cell tumors, Alpha-Foetoprotein (AFP) and beta-Human Chorionic Gonadotropin (HCG) is also required, since levels will often be increased.

A diagnostic biopsy is obtainable via transthoracic or transbronchial needle aspiration, mediastinoscopy, anterior mediastinotomy, or Video-Assisted Thoracoscopic Surgery (VATS). However, a tissue biopsy is not always necessary for the diagnosis of an anterior mediastinal mass when the clinical picture and the radiographic characteristics fit a classic prototype, as is typically the case with thymoma, teratoma, and thyroid goiter.

Mature teratomas are well-demarcated, displacing rather than invading adjacent structures; are of variable size (3-25 cm; with a mean diameter of 10 cm); usually encapsulated cystic mass with septal or rim enhancement of variable attenuation which is consistent with different tissue characteristics i.e, fat, water dense cystic spaces, fat-fluid levels, homogeneous soft-tissue density and variable degree of calcifications. Teeth or bones are not frequently seen (8%). The presence of a fat-fluid level is accepted as diagnostic but is rarely seen. On the contrary, immature teratomas are usually solid [2]. In the present case, CECT thorax was suggestive of a well-defined circumscribed round to oval heterogeneous dense lesion measuring approximately 8.4×8.4×10.4 cm with variable attenuation. Attenuation was consistent with fat, soft tissue density and calcific components along with some areas of necrosis. Echocardiography may reveal extra pericardial mass compressing and invading surrounding structures. Immature teratomas constitute heterogeneous signal intensity on Magnetic Resonance Imaging (MRI). The MRI is highly sensitive in delineating minimal invasion by fat plane obliteration and lacks ionising radiation. In the present case, mass was compressing the surrounding structure without any invasion, anteriorly and laterally, mass was closely abutting adjacent ribs with no erosion and intercostal muscles, medially abutting the main pulmonary artery and left pulmonary trunk and posteriorly abutting the left main bronchus and left superior segment bronchus.

The treatment of choice for mediastinal teratoma due to possible complications such as compression of adjacent tissues, rupture, or malignant transformation is complete surgical excision [3]. However, surgical excision may be hampered by tight adhesions with the neighborhood structures creating operative difficulties, particularly around the pericardium, great vessels, thymus, diaphragm and phrenic nerve. Other complications are intraoperative perforation of a cystic cavity, pleural effusions and haemorrhages [7]. Large tumors with extensive adhesion can lead to a large wound surface, incomplete lung expansion, injury to vital organs and residual cavity in the chest, postoperative bleeding and infections. Preserving the phrenic nerve, recurrent laryngeal nerve vagus nerve, and brachial plexus nerve are paramount, but at times, injuries are inevitable with devastating ill-effects [8]. Mediastinal teratoma is usually not fatal itself but the complications of extensive surgical procedures, such as pneumonectomy, can cause death [7]. Postoperative complications and surgical site infections further worsen the results.

She was an active smoker with chest mass on X-ray and so the differential diagnosis of infection (community acquired pneumonia, pulmonary tuberculosis) and malignancy was considered. Her CT scan was suggestive of mature teratoma. The patient was unusually presented in her late 50s. It can be due to atypical age presentation and perhaps, slow growing benign nature of the neoplasm, hence diagnosed late. She had typical pressure symptoms without any invasion or architectural distortion. Her symptoms responded well to conservative medical management.

Patient was counselled about the nature of illness and its natural course. She was planned for surgical excision. Unfortunately, she did not consent for surgery owing to her socio-economic issues and the non aggressive nature of the illness. Further less effective treatment options were explored, however, tissue biopsy could not be done. Since, her symptoms were non progressive and not alarming and benign nature of teratoma, patient was planned for conservative management and regular follow-up. The patient was followed-up at 1, 3, 6 months and 6th monthly thereafter for her symptoms, quality of life, and chest radiograph.

Her symptoms did not progress at the end of the 6th month. There were no alarming signs of progressive breathlessness, distressing cough, fever, expectoration, hemoptysis, chest pain, loss of appetite or loss of weight. Patient was able to do all her chores and has resumed her farm activity with no limitation.

The conservative approach can be explored further over surgical excision for benign teratomas without warning signs; considering access to Cardiothoracic and Vascular Surgery (CTVS) surgeons and surgical complications, socio-economic impact on the patients in resource constraint setups in the Indian sub-continent and other developing countries. Nevertheless, the patient's willingness is of paramount importance.

CONCLUSION(S)

Mediastinal masses have been eluding clinicians for a long time, owing to their common symptoms that are attributable to common infective and non infective aetiologies and their rare incidence. The high incidence and prevalence of infective etiologies in developing countries make their diagnosis even more challenging. The large anterior mediastinal tumor may present as benign teratomas with atypical age of presentation, this must be kept in the differential. Risk and benefit for surgical excision of large mediastinal masses may be individualised among elderly patients periodic assessment for symptomatology for warning signs with quality of life is the key.

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