



Case Report

A case report of a rare benign mature teratoma of the mediastinum in a young adult

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ABSTRACT

Mature teratoma is a rare, nonmalignant tumor of the mediastinum. We report, a rare case of a benign mature teratoma of the anterior mediastinum in a young Nigerian adult. She presented with symptoms of an expanding mass in the mediastinum this included centrally located dull chest pain, dry cough, and weight loss of 4 months duration. The review of the other system and physical examination findings was unremarkable. She had a contrast-enhanced computerized tomogram scan of the chest, which revealed a well circumscribe lobulated, soft tissue mass with fatty foci and calcifications. She had a median sternotomy with excision of the tumor. The histopathological examination of the sections showed structures lined by structures derived from ectodermal, mesodermal, and endodermal germ layers. Ectoderm components included skin sebaceous glands, hair, follicles, choroid coats, and brain tissue. Smooth muscle bundles hyaline cartilage, adipose tissue, and bone were mesodermal derivatives. Endodermal derived components included respiratory epithelium, intestinal mucosa, and seromucous glands. No atypical structure or proliferation was seen. The diagnosis of benign mature teratoma of the mediastinum was confirmed. A high index of suspicion, proper evaluation of patients is key to quick diagnosis and prompt management in such cases.

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1. Introduction

The mediastinum is the most frequent extra gonadal site of germ cell tumors. About 5-10% of all germ cell tumors found in the mediastinum, with about 95% of the tumors located in the anterior compartment (anterior mediastinum).¹⁻³ Benign teratomas of the mediastinum are rare but by far the most common germ cell tumor. It accounts for 50-70% of mediastinal tumors. Benign germ cell tumors are considered as benign teratomas or dermoids if they are primarily solid in-consistency.⁴ They are regarded as epidermoid or dermoid cysts if they are mainly cystic.⁴ There are two types of benign teratomas based on histopathological characteristics; this includes the mature (well-differentiated) and immature (poorly differentiated) tumors originating from any of the germ cell lines. We report the case of a benign matured teratoma in an 18-year-old

undergraduate student.

2. Case Report

An 18 years old undergraduate student, presented to the general outpatient clinic with a history of a dull ache located in the retrosternal area of the chest, the pain was non-radiating, no postural relationship and no known relieving or aggravating factors. The chest pain was associated with dry cough and weight loss but no accompanying history of fever, drenching night sweats. No difficulty with breathing, dyspnea on exertion, orthopnea, or paroxysmal nocturnal dyspnea. A review of the other systems did not provide any additional information. Physical examination was unremarkable. Based on the patient's clinical presentation, she was commenced on triple therapy treatment for peptic ulcer disease by the general practitioner. The initial sputum test isolated streptococcus species. Fungal study and the Gene Xpert results returned

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negative for *Mycobacterium tuberculosis*. She had a course of antibiotics based on the antibiogram for lower respiratory tract infection. However, she represented to the Pulmonology clinic with no clinical improvement of her symptoms. She underwent the following investigations—chest radiograph, which showed a well-demarcated soft tissue shadow in the left upper and middle zone, obliterating the left cardiac border. The electrocardiogram showed features of voltage criteria for left ventricular hypertrophy. Transthoracic echocardiography revealed mild pericardial effusion and a compressing mass in the pulmonary trunk. The results of full blood count, electrolyte/creatinine, and urea were all within normal limits. Her HIV, Hepatitis B, and Hepatitis C were all negative. The contrast-enhanced computerized tomogram revealed a well-defined mixed density heterogeneous enhancing mass measuring 12.0x 9.2 cm in the axial dimension. The tumor was located in the anterior mediastinum and extending into the left middle zone of the lung field. (Figure 1A,B). Within this mass, there were fat density and foci of calcification (Figure 1C). The provisional diagnosis of anterior mediastinal teratoma to rule out other differentials such as thymoma and lymphoma. She was referred to a cardiothoracic surgery center for further management. She subsequently had a sternotomy and excision of the mass. The patient had an uneventful post-surgical recovery.

Histology report showed sections lined by structures derived from ectodermal, mesodermal, and endodermal germ layers. No atypical structure or proliferation seen. The features were keeping with an anterior mediastinal benign mature teratoma. A written informed consent of the study subject was obtained for the publication of this case.

3. Discussion

Benign teratoma of the mediastinum are rare and account for only 5 to 10% of mediastinal tumors.⁵ Several theories exist to explain how benign teratoma develop; however, the most widely accepted suggests that they arise from the failure of migration of germinal nests of cells located along the urogenital ridge to the gonads during embryonic development. There is no gender predilection in benign mediastinal teratomas. The age of presentation is variable, ranging from 7 months to 65 years, most occur in young adults in the third and fourth decade of life (the twenties and thirties).⁶ Available evidence so far has not linked any predisposing conditions or associated abnormalities with patients developing these tumors. Benign teratoma is usually asymptomatic; they are found only on incidental chest X-rays or other imaging studies of the thorax performed for an unrelated reason. When symptoms are present, sub sternal chest pain, dyspnea, and cough productive of hair or sebum (trichoptysis) are the most common. The presence of weight loss, fever, malaise, and increasing caliber of the chest pain will suggest that the

tumor has ruptured into the tracheobronchial tree, pleural cavity, pericardial space, or great vessels. The age, sex, and clinical presentation of our patient were typical of benign teratoma of the mediastinum with no clinical evidence of tumor rupture. The differential diagnosis considered include pulmonary tuberculosis, especially in a TB-endemic area, fungal infection, and pulmonary malignancy. In the case under review, the microbiologic study and sputum cytology did not support any of the possible differential diagnosis.

Chest radiography is usually the first imaging study in an individual with symptoms. The PA view allows for confirmation of the tumor location, whereas the lateral chest radiograph determines the specific site.

CT is the mainstay of diagnosis. It helps in differentiating the type of teratoma, and to identify cystic teratoma that has ruptured. Benign teratomas most often appear as well defined lobulated cystic masses. The anterior section of the mediastinum is the leading site for the vast majority. Solitary tumor in the posterior or middle mediastinal compartment is rare. Fatty foci, mainly sebaceous fat is seen in more than 75% of the cases, with characteristics fat-fluid levels and up to half of the teratoma contain rim like or tooth-like calcification. The presence of fat tissue or calcification, especially bone or tooth-shaped calcification, is a diagnostic clue.⁷ CT findings of tumor rupture depend on the location. In the mediastinal space, ill-defined tumor margins, complex internal components, a bursting configuration of inner fat and dirty mediastinal fat are common. Rupture into the lung parenchyma produce pneumonic changes that can be complicated by pleural effusion and, at times, an abscess. Rupture into the pericardial space result in pericardial effusion and pulmonary edema.⁸ In our case, the contrast-enhanced computerized tomogram revealed a well-defined mixed density heterogeneous enhancing mass with fat density and foci of calcification. There was no CT evidence of rupture.

Surgical removal of benign teratoma of the mediastinum is usually the treatment of choice.⁹ The best surgical approach is dependent on the size of the mass and the involvement of the other structures, requiring additional procedures. Median sternotomy is preferred, and the tumor reoccurrence following complete surgical excision is rare. Radiation therapy and cytotoxic drugs play no role in the management of this tumor as benign teratoma is non-responsive to these modalities of treatment. Our patient had a median sternotomy with subsequent excision of the mass. Her post-surgical follow up in the clinic had been uneventful.

Prognosis following the tumor resection is favorable. There has been a report of prolonged survival following complete or subtotal resection of the mass.¹⁰ Mortality following surgery is low.

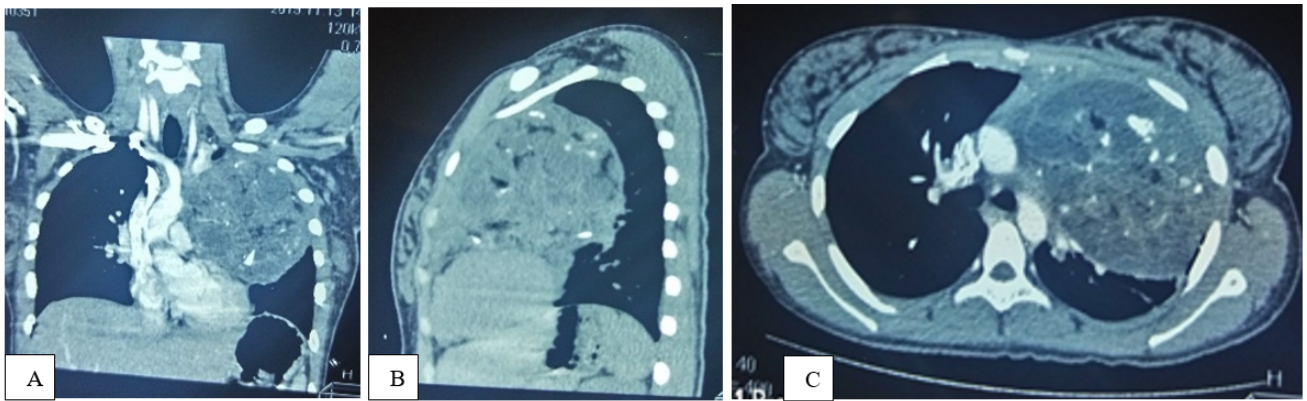


Fig. 1: The computerized chest tomogram images are showing a lobulated mass located in the anterior mediastinum (images A and B). There are fat density and foci of calcification within it (image C).

4. Conclusion

We have presented a rare case of benign mature teratoma of the anterior mediastinum in a young adult. Missed and managed for a lower respiratory tract infection. She had complete resection of the tumor, and her postsurgical clinic visits have been uneventful. Clinicians' index of suspicion and proper evaluation of patients beyond pulmonary tuberculosis cannot be over-emphasized

5. Source of Funding

None.

6. Conflict of Interest

None declared.

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