

Case Report

Giant Mature Teratoma of the Thorax – a rare cause of episodic shortness of breath

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Introduction

Germ cell tumors can rarely occur in the mediastinum and can mimic various other disorders. We report a young patient who had shortness of breath of two years duration, mimicking bronchial asthma. Computed tomography (CT) of the chest revealed a large mature teratoma completely occupying the right hemithorax. He underwent surgical excision of the tumor and recovered uneventfully. Histology confirmed the diagnosis of mature teratoma.

Germ cell tumors (GCT) occur most commonly in the gonads. However, they can rarely present in extragonadal locations. The anterior mediastinum is the commonest extragonadal site and the tumor is usually located in or near the midline [1,2].

Mediastinal GCTs represent approximately 1-3% of all germ cell neoplasms [3]. We report a young male patient presenting with an unusually large mature teratoma of the thorax.

Case report

A 28-year-old male presented with fever of three days duration. He also complained of a dull ache on the right side of the chest for two years that was slowly worsening. He had been treated for bronchial asthma for two years due to episodic shortness of breath and wheezing.

There was no history of environmental triggers, features of atopy or family history of similar disease. He had been started on inhalers, but as there was no response to treatment he had discontinued therapy and currently was not on any medical follow up.

On examination, there was dullness to percussion and reduced air entry in the lower and middle zones of the right lung with a monophonic wheeze. The trachea was centrally located. Other system examinations were unremarkable.

His chest X-ray revealed a large rounded mass in the right hemithorax [Figure 1].



Figure 1: Homogenous mass in the right hemithorax

A contrast enhanced CT scan of the thorax revealed a large hypodense mass in the right hemithorax, measuring 17cm (cephalocaudal) by 12cm (transverse) by 13cm (anteroposterior). The mass consisted of fat density foci with soft tissue components and wall calcifications. The right atrium and the superior vena cava were compressed and displaced. The right pulmonary artery and main bronchus were displaced superiorly. There was no lung consolidation, collapse, masses or pleural effusions. The features were in favour of a mature teratoma [Figures 2, 3].

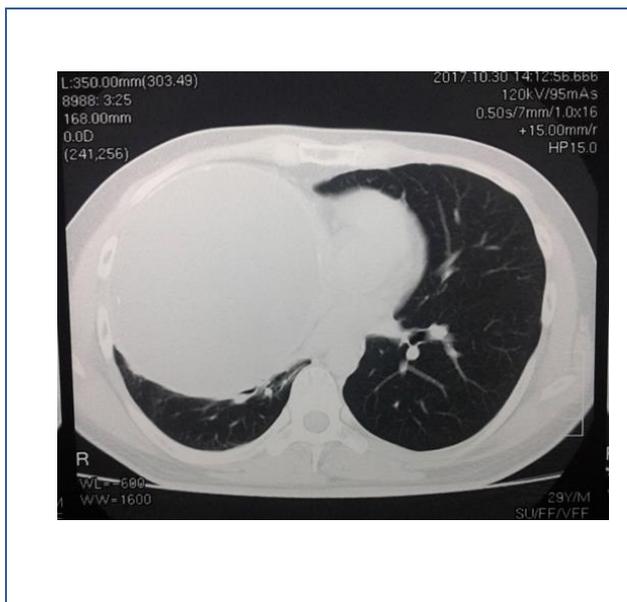


Figure 2: CT scan of thorax showing a large mature teratoma occupying the right hemithorax

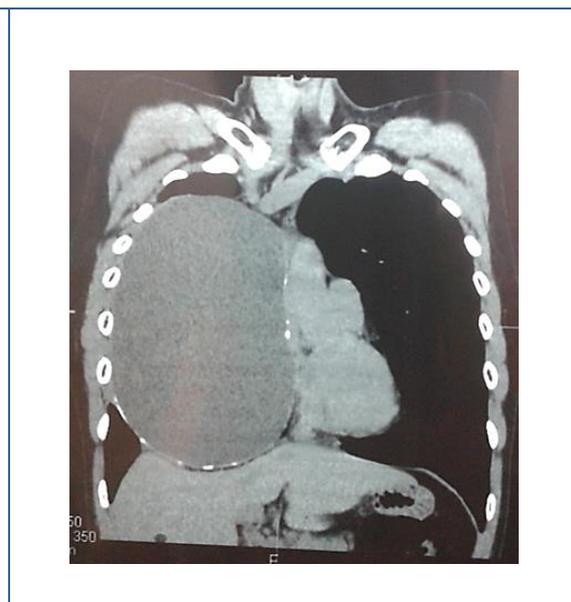


Figure 3: CT scan of thorax showing a large mature teratoma occupying the right hemithorax

The liver, spleen and kidneys (including bilateral adrenal glands) were normal and there was no intra-abdominal lymphadenopathy. Haematological workup and inflammatory markers, including ESR, were normal. The febrile episode was managed as non specific viral fever. He underwent complete surgical excision of the tumour and recovery was uneventful. Histology confirmed the diagnosis of mature teratoma.

Discussion

GCTs in the gonads are thought to be derived from pluripotent primitive stem cells. During the migration of these primordial germ cells from the yolk endoderm to the gonads during early embryogenesis, the cells that are seeded along the midline structures are thought to give rise to extragonadal GCTs [4].

Based on their clinical presentation, cytogenetics and pathology, germ cell tumors are classified into five subtypes: (i) teratoma/yolk sac tumour of infancy; (ii) seminoma and non-seminoma of young adults; (iii) spermatocytic seminoma of elderly men; (iv) dermoid cyst; and (v) gestational trophoblastic tumours. Only the first two occur in both gonadal and extragonadal locations [5].

There is no gender predisposition for benign GCTs. However malignant GCTs tend to occur more commonly in males. Of mediastinal GCTs, mature teratoma is the commonest histologic subtype followed by seminoma [3].

Mature teratomas are benign, well differentiated, slow growing tumors derived from more than one of the three embryonic germ cell layers [4]. They can occur in patients aged 1 year to 73 years and the mean age of presentation is 28 years [6].

Mediastinal mature teratomas are asymptomatic in a majority. They are usually diagnosed incidentally in chest radiographs obtained for unrelated reasons [7]. However, cough, chest discomfort and pain or infection can be the presenting manifestation. Large tumors may produce symptoms by compressing mediastinal structures and in infants, respiratory distress may ensue [8].

Rupture into adjacent structures is a rare complication. It is believed that digestive enzymes produced by tumor tissue cause autolysis of the teratoma wall resulting in rupture [9]. Most commonly they rupture into the adjacent lung and tracheobronchial tree followed by pleura, pericardium or great vessels [10,11,12,13]. In such circumstances they can manifest as haemoptysis, pleural and pericardial effusions or patients may expectorate hair and sebaceous material. Cardiac tamponade and pneumothorax are also described [4].

Malignant transformation of mediastinal GCT is extremely rare [14]. Most cases of malignant transformation of GCTs occur subsequent to chemotherapy or irradiation [15,16]. Due to the compressive effect on large airways, these tumors may be misdiagnosed as primary respiratory disorders such as bronchial asthma, as in our patient. Interesting reports of teratomas compressing the pulmonary artery presenting as valvular heart disease are also described in the literature [17].

Conclusion

GCTs of the mediastinum can have varied presentations which may mimic other disease conditions. Thus imaging (in this case, a chest X-ray) is of paramount importance in cases where disease conditions fail to respond to standard treatment or when a patient has atypical symptoms or signs. Early detection of these tumors leads to less complications and enables a curative resection.

Consent

Informed written consent was obtained from the patient for publication of this case report and for all accompanying images.

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