Case Report

Chest Pain due to Right Atrial Compression Caused by a Thymolipoma

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Thymolipomas are rare tumors of the mediastinum constituted by fatty and thymic tissues. They may reach large dimensions and manifest themselves clinically by compression of adjacent structures. Their behavior is benign and the treatment is surgical excision. We report the case of a healthy, young individual, who complained of precordialgia and dyspnea as the major symptoms of a thymolipoma of approximately 12 cm compressing the right atrium.

Thymolipomas are rare tumors of the anterior mediastinum formed by the association of fatty, epithelial, and lymphoid tissues of the thymus [1]. They were first described by Hall in 1948 in a study on tumors composed of fat and thymic cells [2]. They represent 2 to 9% of all thymic neoplasias, and, up to 1950, only approximately 50 cases had been reported [3]. In recent years, no update on the exact number of current cases has been published, but with the improvement in diagnostic methods and the relative ease of access to medical services, this number is believed to be considerably greater. Although no sexual predominance has been observed, and the tumor may appear at any age, they are more frequently found in young individuals of the male sex [4].

Case report

The patient was a 21-year-old male from inner São Paulo State, who complained of chest pain for approximately 1 week. The pain was characterized as a continuous ill-defined weight located in the precordial region, with no irradiation, which improved partially and temporarily with the use of dipyrone, and got worse with certain positions of the patient, such as the dorsal decubitus. The patient also complained of the following: dyspnea on mild to moderate exertion, and also at night, when lying down, which made it impossible for him to sleep; dyspeptic symptoms, such as epigastralgia of the burning type, which got worse after food ingestion, asthenia, and loss of appetite.

The patient reported no other pathologic antecedents, such as arterial hypertension, diabetes mellitus, smoking, alcoholism, or use of drugs. He also denied heart diseases in the family.

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On physical examination, the patient was hydrated, acyanotic, anicteric, eupneic, afebrile, with healthy coloring, in regular general condition, and had neither jugular venous distension nor peripheral edema. His blood pressure was 140/100 mmHg and his heart rate was 120 bpm. His pulses were palpable, symmetric, rhythmic, with no changes in peripheral perfusion. The ictus cordis was located on the fifth left intercostal space, at the level of the left midclavicular line, and had approximately 2 digital pulps. The cardiac sounds had normal intensity and no cardiac murmur was heard. On pulmonary auscultation, the respiratory sounds were present bilaterally, and no rales were heard. The abdomen was flat, flaccid with hydro-aerial noises, not tender on palpation, and no visceromegaly was observed.

The biochemical tests and electrocardiogram showed no changes. On chest radiography, a mild enlargement of the cardiac area was observed with an expanding lesion in the anteroinferior mediastinum, in continuity with the cardiac image (fig.1). The esophagogram showed no signs of extrinsic compression of the esophagus. Upper digestive endoscopy showed only a mild enanthematous antral gastritis.

Transthoracic echodopplercardiography showed a mild extrinsic compression of the anterolateral region of the right atrium. The transesophageal echocardiogram confirmed this compression with no significant hemodynamic repercussions, and the presence of a mild systolic reflux (escape) in the tricuspid valve (fig. 2).

To complement the investigation, the patient underwent chest computed tomography performed with 5- and 10-mm-thick axial sections after intravenous infusion of contrast medium. The tomography revealed the presence of an expanding lesion with a fat attenuation coefficient, regular and precise contours, located in the anterior mediastinum to the right, slightly deviating from the right atrium posteriorly. The lesion measured 12.0 x 7.4 x 9.6 cm and was suggestive of thymolipoma or pericardial lipoma (fig. 3).

With these hypotheses, the patient was referred for surgical treatment. Thoracotomy provided complete excision of the tumoral mass, which weighed approximately 580 g. No regional macroscopic metastases were evident, and later anatomicopathological examination confirmed the diagnosis of thymolipoma (fig. 4).

Discussion

The exact nature of thymolipoma is unknown [5]. Initially, the lesions were believed to represent lipomas inside the thymus, which was not confirmed because of the existence of a significant

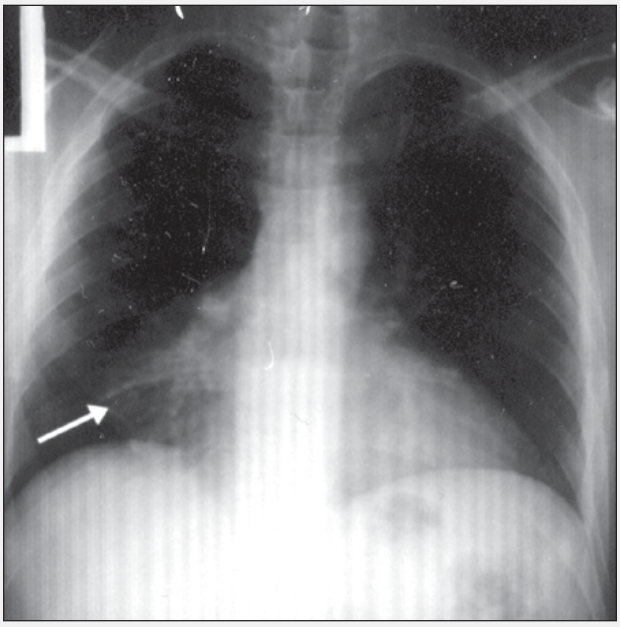

Fig. 1 - Chest radiography (PA) suggesting an expanding lesion in the anteroinferior mediastinum in continuity with the cardiac image.

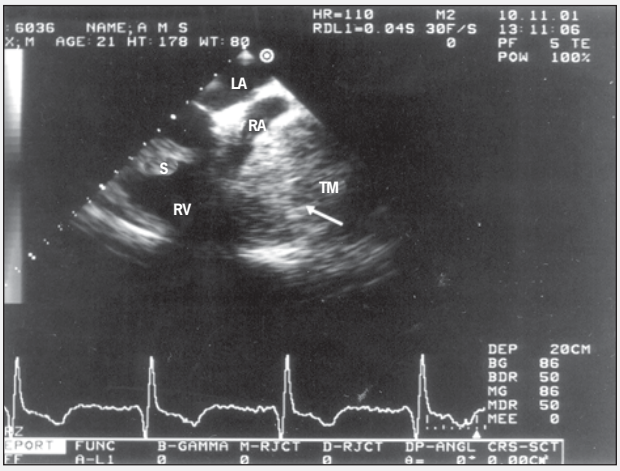

Fig. 2 - Transesophageal echocardiogram showing a tumor mass compressing the anterolateral and inferior region of the right atrium, reducing the cavitary diameter. LA= left atrium, RA= right atrium, RV= right ventricle, S= interventricular septum, TM= tumor mass.

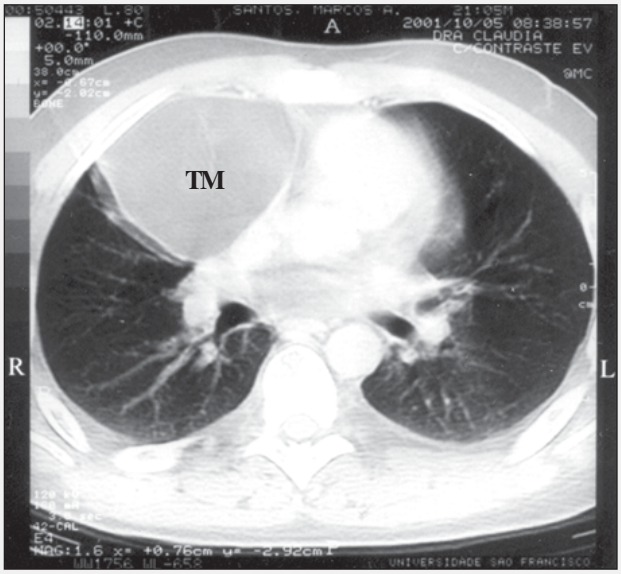

Fig. 3 - Expanding lesion with a fat attenuation coefficient located in the anterior mediastinum to the right, shifting the right atrium posteriorly. TM- tumor mass.

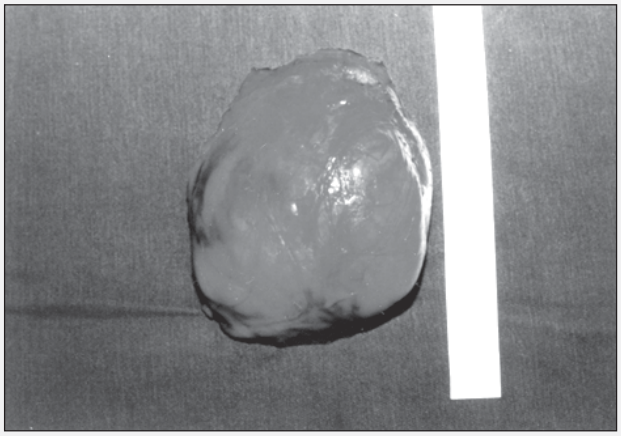

Fig. 4 - Anatomical appearance of the thymolipoma.

increase in the amount of thymic tissue itself [1,5]. These tumors were also thought to be a combination of lipoma and thymoma, and the predominance of fatty tissue could represent a normal involution of the organ. However, the normal appearance of the thymic tissue refutes this affirmation. Finally, another hypothesis postulates that these tumors begin as a true thymic hyperplasia (ie, an increase in the amount of normal thymic tissue), which, later, degenerates to fatty tissue [1,5].

Grossly, thymolipomas are yellow, have a soft consistency and a bilobular configuration, which makes them very similar to the normal thymic gland [1]. They are usually large and may become huge masses. In 68% of the cases published, these tumors weighed more than 500 g, and, in 23% of the cases, they exceeded 2,000 g. The largest tumor described weighed more than 12,000 g [3,10].

Microscopically, they are formed by adult fatty tissue intermingled with normal thymic tissue [5]. In typical cases, germinal centers are not observed, as in the cases detected with thymic hyperplasia [4,5].

Small thymomas have no radiological particularities that allow their differentiation from other anterior mediastinal masses. However, as already mentioned, those tumors are usually large, and, due to their consistency, they tend to descend to the diaphragm. The tumors adapt to the diaphragmatic contour, being situated in an inferior position, and leaving the superior mediastinum relatively free [2]. Sometimes the content of the tumors may help in differentiating them from other mediastinal masses due to their relative radiolucency, a characteristic that, on some occasions, may be observed on chest radiography, but is more clearly identified on tomography [7].

Typically, thymomas cause few symptoms, unless they reach large dimensions. Thus, these lesions may be occasionally discovered during imaging examinations in completely asymptomatic patients.

In our patient, the symptoms of chest pain and dyspnea occurred typically because of the compressive characteristic of the tumor, which, due to its significant volume, compressed the right atrium, causing hemodynamic alterations. These hemodynamic alterations not only changed the venous flows at the entrance of the right atrium and tricuspid valve, but also caused changes in the coronary reserve flow, which may certainly have contributed to the symptoms of chest pain and dyspnea of the patient. These symptoms may also have been aggravated by the degree of heart

compression of the tumor, because they used to worsen with certain positions adopted by the patient.

Rare cases have been reported on the association with myasthenia gravis [8,9], aplastic anemia [10], Graves' disease, erythrocytic hypoplasia, and hypogammaglobulinemia [8]. The behavior of these tumors is usually benign, and no recurrences have been reported after resection.

Early diagnosis should be the major objective of the clinician. This will only be possible if a high degree of clinical suspicion and a pathophysiological perspective exist, because the patients are usually young, oligosymptomatic, and, many times, have no known risk factors for cardiovascular disease. Therefore, we emphasize the importance of considering mediastinal tumors as a differential diagnosis of patients with chest pain.

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