Upper Airway Obstruction with a Large Calcified Substernal Benign Goiter

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Upper tracheal obstruction, stridor and dispnea developed in a 53 year-old woman because of a large calcified benign goiter. There was a mass of 3 to 4 cm in size with calcification located on the right side of trachea and in the substernal region on the chest roentgenography. CT revealed bilaterally nodular substernal goiter and tracheal compression with the calcified nodule. Cytological finding of fine needle aspiration biopsy was benign goiter. Bilateral subtotal thyroidectomy was performed to the patient with the diagnosis of substernal benign goiter without any complication. [Journal of Turgut Özal Medical Center 1996;3(3):203-205]

Key Words: *Substernal goiter, calcification, airway obstruction*

Büyük kalsifiye substernal benign guatra bağlı üst solunum yolu obstrüksiyonu

Tiroid bezinde, solunum yolu obstrüksiyonu oluşturacak kalsifiye, büyük benign nodüller sık görülmemektedir. 53 yaşındaki kadın hasta, büyük kalsifiye benign guatra bağlı üst hava yolu obstrüksiyonu, stridor ve dispne ile bize geldi. Akciğer radyografisinde substernal bölgede tiroidin sağ lobunda trakeayı iten 3x4 cm'lik bir kitle görülerek, CT'de kalsifiye trakeal bası oluşturan bilateral substernal nodüler guatr tesbit edildi. İnce iğne aspirasyon biyopsisinin sitolojik sonucu benign guatr olarak bildirildi. Hastaya substernal benign guatr tanısıyla komplikasyonsuz bilateral subtotal tiroidektomi uygulandı. [Turgut Özal Tıp Merkezi Dergisi 1996;3(3):203-205]

Anahtal Kelimeler*: Substernal guatr, kalsifikasyon, solunum yolu obstrüksiyonu*

Substernal goiter is 7% of the mediastinal tumors. The majority are large, mostly benign masses found in the superior and anterior mediastinum, although 3-15% can be malignant (1).

The presenting symptoms are mostly respiratory symptoms because of the mass compression (2). Diagnostic evaluation includes chest X ray, computed tomographic (CT) scan and fine needle aspiration biopsy (FNAB) (3,4). Calcification is usually considered as a sign of malignancy and size of calcifications are mostly small (5,6).

The dispneic patient presented here had a substernal goiter with a 4x3 cm calcification

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compressing trachea that was seen in the chest reontgenography.

CASE

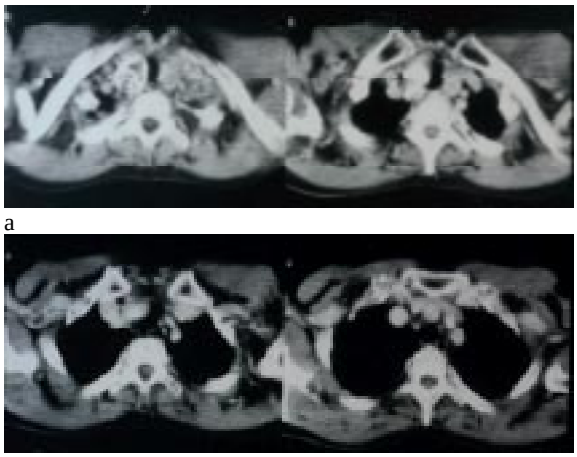
Our case was a 53 year-old woman admitted to the hospital with dyspnea. Her other complaints were dysphagia, sweating, tachycardia and a cervical mass. Her complaints showed progression prior to the week she admitted to the hospital.

In the physical examination; there was a mildly palpable, hard thyroid gland. She had stridor and auscultation of the lungs was normal.

Chest roentgenogram showed a 3x4 cm calcification which compressed the trachea from the right side (Figure 1). Computed tomographic evaluation revealed a 3x4 cm nodular calcification on the right lobe of thyroid which compressed the trachea and also bilaterally nodular cystic diffuse goiter (Figure 2a). A part of the thyroid was seen in the thorax (Figure 2b).

Cytological result of fine needle aspiration biopsy was benign colloidal goiter. The patient was operated, since she had the symptoms related to the compression of the trachea and esophagus. A bilateral subtotal thyroidectomy was performed by low collar incision approximately 11 cm in length. The patient's trachea was controlled in the operation since tracheomalacia secondary to prolonged compression of the trachea by the mass could occur. A stone-like structure 3x4 cm was seen in the macroscopic evaluation of the resected thyroid (Figure 3). The pathologic result was colloidal cystic goiter. The patient stayed in the hospital two days after the operation, and she had no symptom and complication.

Figure 1. Chest roentgenogram, showing the trachea deviated to the left with the compression of a large calcified mass.



a

b

Figure 2. CT scan of the patient with a 3x4 cm calcified nodular substernal goiter on the right of the trachea

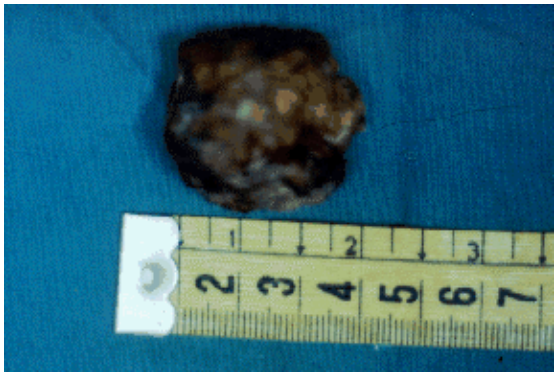


Figure 3. The stone-like structure that was removed from the patient with thyroidectomy

DISCUSSION

Part or all of the thyroid is intrathoracic in about 1 per cent of the patients having thyroidectomy. From 75 to 94 per cent of the intrathoracic goiter are found in the anterior mediastinal compartment and called substernal goiter. Substernal goiter

usually represents the extension of cervical thyroid tissue into the chest rather than aberrant thyroid gland (3,4).

Substernal goiter occurs predominantly in women and middle age or older. It is usually asymptomatic. When it is symptomatic the patients mostly have respiratory symptoms like hoarseness, stridor, cough and dyspnea. If there is a compression to the esophagus dysphagia occurs (2).

Reontgenographic manifestations are contrlateral displacement of the hyoid, trachea and larynx, flecks of calcifications and compression of the trachea and esophagus. CT demonstrates all these findings and also the dimensions of the tumor or thyroid gland can be measured (3).

The case we reported had stridor, dyspnea which were the signs of tracheal obstruction and with chest reontgenogram and CT the substernal goiter was diagnosed before the operation. The size and the type of the calcification seen in the chest reontgenogram and CT was a rare manifestation and in the resected thyroid there was a stone-like structure dimensions of 3 by 4 cm. A similar case of calcification in thyroid was reported by Kochi et al in 1993 (7). Calcification in thyroid nodules usually suggests malignancy according to the literature (5,6). Histopathologic result of our case was colloidal benign goiter and a calcified nodule.

Symptom of airway, vessel, nerve or esophageal compression needs to be resected (2,8). For the large substernal goiter with mediastinal fixation, for goiters associated with severe superior vena cava obstruction, recurrent goiters and for carcinoma a median sternotomy can be performed (3,4,9). Tracheomalasia can occur after thyroidectomy if the trachea compressed for a long time by the goiter; so evaluating the upper trachea during and after the operation is important (1,8).

Since the typical substernal goiter can almost always be removed through a cervical incision; our case was operated by a cervical incision and the gland is delivered carefully through the thoracic inlet into the cervical wound without a complication.

Patients who admit to the hospital with respiratory symptoms suggesting an upper airway obstruction like stridor and dyspnea, tracheal deviation in the chest reontgenogram should be carefully searched and substernal goiter must be considered in the differential diagnosis especialy if there is an anterosuperior mediastinal mass.

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