Case report
Ectopic thyroid malignancy in the right ventricle of the heart

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Abstract

In a 55-year-old woman (10 years after subtotal thyroidectomy for follicular adenoma) echocardiography revealed a 25 × 23-mm tumour in the right ventricular outflow tract. The successfully removed tumour appeared to be a follicular carcinoma. Subsequently, there has been no clinical and laboratory evidence for another site of metastasis or ectopic thyroid. The whole body 131I scan showed only correct radioiodine uptake in the place of cervical residual thyroid gland. We believe this is the first description of follicular carcinoma in cardiac ectopic thyroid. © 1997 Elsevier Science B.V.

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1. Introduction

Intracardiac primary tumours are rare and most of them are benign. More common (70%) are the metastatic tumours arising from breast, lung, uterus, stomach or kidney cancer, generally as a part of widespread metastases. Cardiac metastases occur in less than 1% of patients who die of thyroid carcinoma [8]. The involvement of the heart by the neoplasms of thyroid origin can also appear as a direct extension of neoplastic thrombus through the thyroid veins, vena cava superior to the heart [8].

Ectopic thyroid tissue in the heart is extremely rare. Since 1963, only 11 cases of benign intracardiac thyroid masses have been described and 10 of them have been found in the right ventricle [1,3,5–7,9]. We believe, we present the first case of malignancy in struma cordis.

2. Case report

A 45-year-old woman underwent a subtotal thyroidectomy for a large multinodular nontoxic goiter. Histologic examination revealed the macrofollicular goiter with hyalinisation and follicular adenoma. Following operation long-term thyroid suppression was not undertaken. Six years later a systolic cardiac murmur was found during a routine physical examination. Four years later she agreed to further investigations because of recurring palpitation and fatigue.

On physical examination the residual thyroid gland had a normal size, shape and consistency. A loud, systolic ejection murmur graded 5/6 was audible in the pulmonary valve area. Electrocardiogram showed a sinus rhythm with right bundle branch block. Laboratory tests showed normal thyroid function: T3 = 1.3 ng/ml, T4 = 89.5 ng/ml, TSH = 1.0 mIU/L and normal basic blood tests results.

On ECHO examination a tumour in right ventricular outflow tract was recognised (Fig. 1). Transoesophageal...
echocardiography revealed mobile spherical homogenous tumour 23 × 25 mm localised just under pulmonary valve, obstructing right ventricular outflow tract and during systole almost completely closing right ventricular outflow. In the pulmonary trunk and in the left and right pulmonary branches no embolic masses were found. The pulmonary artery was enlarged (35 mm). The interventricular and interatrial septum were normal. Right cardiac chambers were dilated with increased trabeculation of right ventricle.

3. Surgical treatment

On 15th of March, 1994 she was operated on with the aid of cardiopulmonary by-pass. The heart arrested with crystalloid cardioplegia. The pulmonary trunk was opened and a tumour appeared through the pulmonary valve. The solid tumour was approximately 3 cm in diameter and arised from interventricular septum just under the pulmonary valve. The solid, greyish and firm tumour mass was excised. The base of tumour was 1 cm in diameter. Its attachment was excised with cautery.

After extirpation of the tumour the pulmonary valve was examined. The leaflets appeared to be normal, but the annulus was dilated and the valve showed moderate central insufficiency. In the postoperative ECHO the function of cardiac valves was found normal.

Histological examination revealed the follicular carcinoma of the ectopic thyroid gland. The tumour was composed of follicular structures containing colloid (Fig. 2). The tumour mass invaded the heart muscle.

The whole body 131I scan using 20 MBq was performed 4 weeks after surgery and showed only cervical thyroid radioiodine uptake (T24 = ~20%). There was no other area of nuclide concentration.

4. Comment

The ectopic thyroid tissue has been found from the tongue to diaphragm. The aberrant thyroid migration can occur very early in embryogenesis and is due to abnormal persistence of contact between the thyroid primordium and bulbus cordis. The development and descent of the thyroid is in anatomical juxtaposition with the heart. The effect of the descending heart on the thyroid gland contribute to the development of the various anomalies of thyroid position. The most common ectopic thyroid has been found in the tongue, then in the submandibular region, the cervical lymph nodes, larynx, trachea, oesophagus, mediastinum, diaphragm and heart [2]. The lesions which affect the main thyroid gland may also involve the ectopic thyroid, including malignancy [4,10].

The differentiation between carcinoma arising in ectopic thyroid tissue and a metastatic carcinoma is difficult. Metastasis from ectopic thyroid carcinoma should be also considered.
In our patient, in spite of thyroidectomy for macrofollicular goiter and follicular adenoma in the past, we do not suggest the diagnosis of the metastasis to the heart, but development of carcinoma in ectopic thyroid. We believe this, because of the very good general physical condition of the patient, the lack of malignancy sign on the neck and the lack of other metastases. A solitary encapsulated thyroid metastasis to the heart has never been reported. The tumor localization on the right side of the ventricular septum is typical for thyroid ectopia. If considering this heart follicular carcinoma as a metastasis from thyroid cancer, it is difficult to believe, that for at least 4 years of metastatic process (it means since systolic murmur was audible) only solitary metastasis in the heart has occurred.

We can suppose that increased TSH production after thyroidectomy could stimulate cardiac thyroid growth and even its malignant transformation.

Although we believe that our case could be considered as malignancy in ectopic thyroid, but for exclusion, the possibility of metastasis from thyroid gland cancer the total thyroidectomy and subsequent whole body scan and ¹³¹I treatment should be performed. Unfortunately the patient refused it. In these circumstances there is no possibility to differentiate between the two mentioned options.

References