Thyroid Carcinoma with Internal Jugular Vein Thrombus: Report of a Case

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A thyroid carcinoma with a tumor thrombus in the great cervical veins is an extremely rare condition. We report herein a case of a 74-year-old woman with papillary thyroid carcinoma together with an internal jugular vein thrombus. The patient with a right anterior neck tumor, diagnosed as papillary carcinoma, was referred to our hospital. Computed tomography identified a low-density mass with heterogeneous enhancement at the right thyroid lobe and a right internal jugular vein stenosis. During surgery, a tumor thrombus was detected in the right jugular vein. Both a total thyroidectomy with a modified neck dissection and a segmental resection of the right jugular vein with the tumor thrombus were performed. The pathological examination verified poorly differentiated papillary carcinoma with muscle invasion and lymph node involvement. The patient received postoperative treatment of 100 mCi of 131I, followed by thyroid stimulating hormone suppression therapy with thyroxine. The patient is free from recurrence 6 months after the operation. Computed tomography was the most useful tool in the preoperative diagnosis of thyroid carcinoma with a tumor thrombus. More precise preoperative diagnosis is an important factor in the clinical outcome. (Kitakanto Med J 2003 ; 53 : 315~318)

Key words: thyroid carcinoma, tumor thrombus, internal jugular vein stenosis

Introduction

It is well known that some types of thyroid carcinoma may induce stenosis of the great cervical veins, however, thyroid carcinoma rarely causes a tumor thrombus in the great cervical veins. To our knowledge, only 20 cases of thyroid carcinoma with a tumor thrombus have been reported. We present a 74-year-old woman with thyroid carcinoma together with an internal jugular vein thrombus. We also include a review of the literature.

Case Report

A 74-year-old woman noticed a right anterior neck tumor in February 2000 and consulted a local doctor. A fine-needle aspiration biopsy cytology (FNABC) was performed three times, but no malignant cells were obtained. The tumor was enlarged and diagnosed as a papillary carcinoma by FNABC in April 2002. The patient was then referred to our hospital. The tumor was 4.2 × 2.4 cm in size and elastically firm with uneven surface. The right cervical lymph node was 3 cm in diameter. Ultrasonography (US) revealed a hypoechoic tumor with irregular shape, unclear borders and an heterogeneous internal echo (Fig. 1). Computed tomography (CT) identified a low-density mass with heterogeneous enhancement in the right thyroid lobe (Fig. 2a). Contrast-enhanced CT showed stenosis of the right internal jugular vein (Fig. 2b). The serum thyroglobulin concentration was 2459 ng/ml.

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During surgery, a tumor thrombus was detected in the junction of the right upper thyroid vein and the right jugular vein (Fig. 3). Both a total thyroidectomy with modified neck dissection and a segmental resection of the right jugular vein with the tumor thrombus were performed. The tumor was pathologically poorly differentiated papillary carcinoma with muscle invasion and lymph node involvement. Final TNM categorization was Stage III (pT4N1aM0). The intravenous thrombus without adherence to the venous wall showed pathologically papillary appearance as well as an intrathyroidal tumor (Fig. 4). The patient received postoperative treatment of 100 mCi of $^{131}$I, followed by thyroid stimulating hormone (TSH) suppression therapy with thyroxine. The patient is free from recurrence 6 months after the operation.

**Discussion**

Thyroid carcinoma associated with a great vein tumor thrombus is a rare condition. To our knowledge, only 20 cases have been previously reported. Seven cases reported prior to 1970 were diagnosed at the time of autopsy. Recently, some cases were
preoperatively diagnosed and followed with successful surgical treatment. We reviewed the clinicopathological characteristics of 14 patients including ours, which have been reported since 1970 (Table 1).1-9 The patients consisted of 11 women and 3 men. The mean age was 56.7 years, ranging 26 to 79 and 12 patients were over 45 years. Thyroid carcinoma with a great vein thrombus is a rare occurrence in young patients.

The symptoms of a tumor thrombus depend upon the site. A high incidence of a tumor thrombus is primarily observed in the internal jugular vein, then extending to other great veins such as the superior vena cava (SVC), the brachiocephalic vein, the subclavicular vein and the axillary vein. The patients with only an internal jugular vein thrombus presented no overt symptoms, while half of the patients with a SVC thrombus complained of SVC syndrome.

Of the 14 patients, seven were correctly diagnosed by CT, venography or US. CT is the most useful tool for the diagnosis of a great vein thrombus.7,10 Typical findings on CT are a distended vein with an enhanced wall, a low-attenuation intraluminal filling defect, and adjacent soft tissue swelling. Although a distended vein and an intraluminal-filling defect were detected on the CT of our patient, we suspected that these findings might be due to stenosis with external invasion of thyroid carcinoma and lymph nodes.

Surgical treatment depends on the degree of extension of the great vein thrombus. In cases of thrombus only in the jugular vein, segmental resection of the jugular vein with the tumor thrombus may be the treatment of choice. A thrombectomy is performed in other cases of a tumor thrombus, which is extended to several great veins. No morbidity associated with internal jugular vein resection has been reported.

Pathological diagnosis was papillary carcinoma in five of the 14 patients, follicular carcinoma in six, Hurthle cell carcinoma in two, and one unknown. In four of the five papillary carcinomas, a tumor thrombus was observed in only one great vein. On the other hand, a tumor thrombus extended to several great veins in five of the six follicular carcinomas. Therefore, the tumor thrombus pattern in the great veins may differ between follicular carcinoma and papillary carcinoma. Koike et al1 reported the reason as follows. In papillary carcinoma, metastatic lymph nodes invaded the adjacent vein. Follicular carcinoma invaded the internal jugular vein directly from a primary tumor, and a tumor thrombus extended to the heart. In our case, which was papillary carcinoma, metastatic lymph nodes might have invaded the right internal jugular vein, because a tumor thrombus was detected at the junction of the right upper thyroid vein and the right jugular vein.

Although there is no sufficient long-term follow up information, the prognosis of thyroid carcinoma with a great vein thrombus is poor. Five of the 14 patients died within one year of the diagnosis. One patient died suddenly. We conclude that the prognosis of thyroid carcinoma with a great vein thrombus is poor compared to that without a thrombus. Thus, preoperatively precise diagnosis are an important factor in the clinical outcome.

References


