Thyroid Gland Hemorrhage in a Patient with Past Medical History of Renal Clear Cell Carcinoma: Report of a Very Rare Case

Corresponding Author: Ziad Abbassi, e-mail: Ziad.abbassi@hopitalvs.ch
Conflict of interest: None declared

Patient: Male, 68
Final Diagnosis: Metastasis of renal clear cell carcinoma
Symptoms: Chest pain irradiating in the left shoulder • tachycardia • increased dysphonia
Medication: —
Clinical Procedure: Total thyroïdectomy
Specialty: Surgery

Objective: Rare disease
Background: The incidence of metastasis to the thyroid gland is extremely rare, with hemorrhage being a particularly uncommon manifestation of metastatic thyroid disease.

Case Report: A 68-year-old man who underwent a right nephrectomy for RCC 8 years ago was referred to the Emergency Department (ED) complaining of upper-chest pain radiating to the left shoulder, tachycardia, and increased dysphonia. An enhanced computed tomography (CT) scan suggested a thyroid mass originating from both thyroid lobes, with right deviation of the trachea due to active bleeding. The patient underwent an emergency total thyroidectomy. The postoperative course was uneventful. The histopathological analysis of the surgical specimen revealed metastasis of an RCC.

Conclusions: Active bleeding of the thyroid gland is a formal indication for emergency surgical management. In patients with a history of cancer, especially in cases of RCC, metastatic disease should be suspected, although in most cases the final diagnosis can only be made after surgery.

MeSH Keywords: Carcinoma, Renal Cell • Goiter • Neoplasm Metastasis • Thyroid Neoplasms • Thyroidectomy

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The incidence of solitary metastasis from renal cell carcinoma (RCC) is about 1–4%, with only 1% occurring in the thyroid gland. The most common metastases of the thyroid gland originate from RCC (48.1%), followed by colorectal cancer (10.4%), lung cancer (8.3%), breast carcinoma (7.8%), and sarcoma (4%) [1,2].

In cases of RCC, secondary involvement of the thyroid gland is uncommon and can occur more than 20 years after a curative nephrectomy. We report the case of a patient with metastatic thyroid carcinoma that originated from renal clear cell carcinoma 8 years after a nephrectomy. As well as describing this case, we discuss the management of thyroid metastasis.

To the best of our knowledge, this is the first published case report of solitary thyroid metastasis with spontaneous bleeding after RCC, and fewer than 50 similar cases of thyroid lesions presenting other symptoms have been reported. Our report emphasizes the rarity of this condition.

Case Report

A 68-year-old white man presented to the Emergency Department (ED) with a 24-h history of chest pain radiating to the left shoulder, palpitations, and worsening dysphonia.

His past medical history was marked by a right nephrectomy 8 years prior for RCC classified as pT1b N0, Fuhrman 2/4 without adjuvant or neo-adjuvant treatment.

On admission to the ED, the patient was hemodynamically stable and fully conscious. He reported dysphagia and odynophagia. The physical examination revealed a non-painful, soft, and mobile multinodular goiter without cervical lymph nodes. Blood tests showed a subclinical hypothyroidism with TSH levels of 0.01 μIU/mL, and T3 and T4 levels at 7.1 and 21.8 respectively. A chest X-ray revealed mediastinal widening with right deviation of the trachea.

Further investigations in the form of an injected chest CT scan revealed a thyroid mass arising from both lobes of the thyroid gland, with active bleeding within the goiter (Figure 1). The specimen weighed 404 g with a well-defined multinodular goiter and cystic and soft hemorrhagic nodules measuring 0.5–4 cm in diameter. The left lobe was 13.55×7.5×5.5 cm and the right lobe was 12×7.9×5.5 cm (Figure 2). The histological examination confirmed a metastatic tumor of renal origin and, more specifically, an RCC.

In light of the histological result, a positron emission tomography (PET) scan was performed, which revealed the presence of micronodules in the right lung and left kidney and in the mesenteric axis, considered as atypical. Our multidisciplinary radio-oncological team concluded that adjuvant treatment was not necessary and suggested a follow-up postoperative CT scan of the chest at 6 weeks after surgery.

Discussion

RCC accounts for approximately 3% of all adult malignancies and is associated with approximately 13 000 deaths annually [1,2]. The most frequent subtype of RCC is clear renal cell cancer, which accounts for about 70–80% of all RCCs [2].

Typical metastatic sites for RCC include the lungs, adrenal glands, intestinal tract, brain, and intra-abdominal organs. Atypical localizations of metastases include the orbit, parotid gland, nasal and paranasal cavities, tongue, tonsils, heart, skin, muscles, and joints, as well as the thyroid gland [1].

RCC accounts for most cases of metastatic thyroid disease, with no significant difference in sex distribution [3,4]. Recurrence remains possible even 20 years after curative nephrectomy, with an average interval of 7.5 years [1].

There have been several reports of late metastases from RCC even decades after potentially curative surgical excision of the primary tumor. Metastatic disease develops in 30% of patients with RCC, for whom the prognosis is extremely poor [1].

The incidence of solitary metastases from RCC is estimated at 4%, and 1% occur in the thyroid gland. Metastatic disease to the thyroid shows no difference in sex distribution. Common manifestations include dyspnea due to airway obstruction, as a consequence of the gland’s increased size or because of acute tumor bleeding, as was the case with our patient. Other symptoms include changes in voice pitch, hoarseness, cough, and odynophagia, which are usually due to a mass effect [1,5].

There are many theories explaining the pattern of metastases from RCC to the thyroid gland. According to the current literature, the incidence of metastasis in a normal thyroid gland is low due to high oxygen tension, the absence of significant carbohydrate concentrations, the presence of large quantities...
Figure 1. Intravenous contrast-enhanced CT of the abdomen. (A) Axial CT image shows a thyroid mass originating from both lobes with an intralesional vascular extravasation of contrast medium, suggesting active bleeding (1). (B) Coronal CT image shows a right deviation of the larynx and trachea caused by the mass (2). (C) Sagittal CT image shows the voluminous goiter and its plunging characteristic.

Figure 2. Histopathological images. (A) Macroscopic image of the specimen. (B) Histological section revealed metastasis of clear cell carcinoma.
of iodine [1,6], and the extensive vascularization network of the thyroid gland that inhibits the embolization of tumor cells. However, in the case of an adenomatous gland, the reduced arterial supply and iodine tissue concentrations have been considered as risk factors for the growth of metastatic malignant cells, which seem to benefit from these favorable conditions in achieving a relatively anaerobic metabolism [7]. Some authors have considered the possibility that RCC metastasizes to the thyroid gland by bypassing the lungs via the paravertebral venous plexus of Batson [8,9].

Further endocrinological investigations are necessary when suspecting metastases of clear RCC, as they can mimic well-differentiated thyroid carcinomas [6]. In these cases, clinical evaluation, biochemical testing (serum TSH levels), fine-needle aspiration biopsy (FNAB), and imaging studies such as high-resolution ultrasonography and CT, should be considered. [10]

Surgical treatment of patients with solitary thyroid gland metastases is recommended because of the unusually good prognosis of patients reported in the literature when they were treated with definitive surgical therapy. A number of factors may be associated with a favorable prognosis after resection of the metastases, including: 1) a long interval between primary tumor resection and development of metastatic disease, 2) evidence of a solitary lesion in the thyroid gland without evidence of widespread metastases, 3) spontaneous regression of metastatic lesions, 4) demonstration of extensive necrosis in the resected specimen, and 5) slow evolution or growth of the tumor and a lack of clinical symptoms [11].

Conclusions

Recurrent disease in patients with a history of RCC presenting thyroid lesions should be suspected regardless of the time interval from the resection of primary tumor. Thyroidectomy is recommended for RCC solitary metastatic tumors to the thyroid gland as the treatment of choice.

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