

## Case report

### Metastasis of renal clear cell carcinoma to the thyroid gland 20 years after nephrectomy – a case report

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*The thyroid gland is not a frequent site of tumour metastases from other organs affected by malignancies. It is estimated, that thyroid metastases represent less than 4% of all malignant thyroid tumors in clinical series.*

*The authors present the case of a 74-year old Caucasian female with thyroid metastases from primary renal clear cell carcinoma with unusually dynamic biological behavior. The patient had undergone left radical nephrectomy for renal cell carcinoma 20 years earlier without any adjuvant therapy.*

**Key words:** thyroid gland, metastasis to thyroid gland, renal cell carcinoma

#### Introduction

Malignant tumours of the thyroid constitute about 1% of all malignancies in humans [1, 2] and among these metastases account for only some 4% [3, 4]. The thyroid gland is a rare site for tumor metastases from other organs with malignancies [2, 5, 6] and clinically significant metastatic thyroid carcinoma is rarely found in clinical practice. The most common sites for metastases of renal cell carcinoma are the lungs [7], bones, brain, breast, colon [8, 9], prostate [1], adrenal cortex [5], salivary gland and lymph nodes [10, 11]. Unusual metastases to others sites are rare, but have been reported [3]. The incidence of metastases from renal cell cancer to the thyroid gland is diagnosed in some 3-24% of selected autopsy series [6]. In this case report we document this rare occurrence.

#### Case report

A 74 – year old woman with a history of renal clear cell carcinoma and subsequent left radical nephrectomy performed some 20 years before, was admitted to our department as an emergency case. She developed progressive shortness of breath, dyspnea, nonproductive persistent cough, stridor and hoarseness. Medical history included hypertension and asthma. She was treated for onset of asthma, but the symptoms persisted and even exacerbated. The patient developed partial airway

obstruction resulting from thyroid enlargement with thyroid compression and obstruction in lower trachea. A chest X-ray revealed displacement of the trachea to the left by the mass in the right neck. No pulmonary tumor was observed. Ultrasound examination revealed a 5.2 x 2.6 cm peripherally calcified round and hypo-echogenic mass occupying a large portion of the right lobe of the thyroid and also demonstrated shifting of the trachea to the left. Enlarged lymph nodes were not palpable in the supraclavicular nor in the laterocervical regions. Fine needle aspiration biopsy was not performed because of exacerbation of dyspnea. Laboratory results were unremarkable, except for an increased glucose level and abnormal blood gases. The levels of the thyroid hormones and TSH were within normal range. Ultrasonography of the abdominal cavity revealed absence of the right kidney due to right nephrectomy and no other abnormalities. As the patient suffered from tracheal stenosis and progression of swelling with dyspnea urgent surgical intervention was necessary. Preoperative imaging examinations and the clinical course of the disease suggested a malignant process.

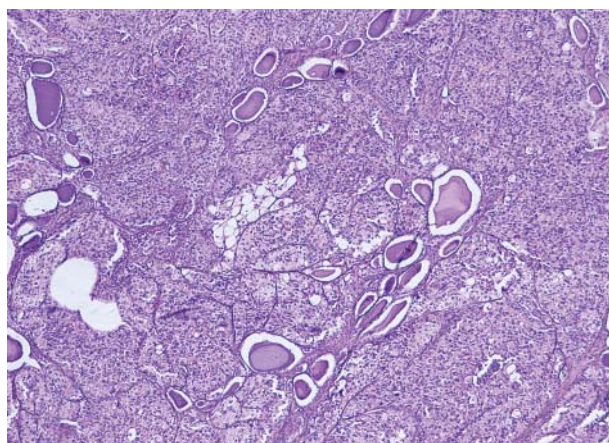
On surgery we observed massive extrathyroidal invasions of muscles, trachea and local tissues. The patient underwent total thyroidectomy with a tracheostomy for airway protection. Regional lymph nodes were not enlarged.

Pathological examination of the thyroid tumor revealed a renal cell metastasis. Microscopically the tumor consisted of multiple wide areas of clear cells with focal oncocytic differentiation interposed between scarce thyroid parenchyma [Figure 1]. Foci of slight polymorphonuclear cells and tumor necrosis were present. The nuclei were small, dark with striking borders. Immunohistochemical staining for both thyroglobulin

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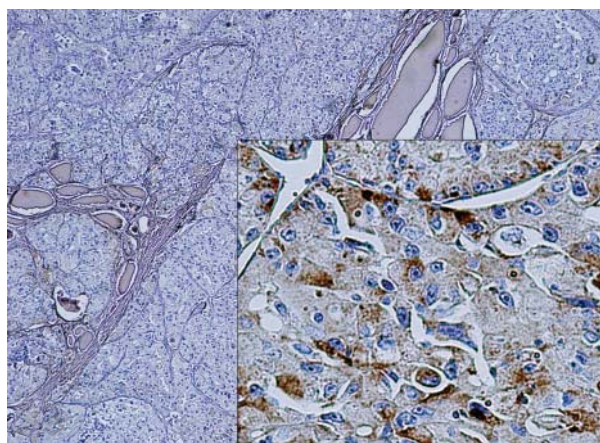
**Figure 1.** Topographic view. H & E stain, magnification x 40: renal cell carcinoma metastasis to the thyroid. The clear cells composed nests are interposed between non neoplastic thyroid follicles

and calcitonin was negative. The apoptotic marker CD 95/APO was positive in some of the neoplastic cells [Figure 2]. Summarizing the results of investigation the diagnosis of metastatic renal cell carcinoma was pronounced.

Over a period of 3 months after thyroidectomy swelling and respiratory problems appeared with episodes of massive hemoptysis. The patient died 4 months after thyroidectomy and over 20 years after nephrectomy.

## Discussion

Metastases to the thyroid gland occur infrequently. Clinical series have shown that renal cell carcinoma is the most common primary tumour to result in symptomatic thyroid metastases and it is followed by breast, lung and malignant melanoma [6]. Renal cell carcinoma is the most frequent urological malignancy in adults, accounting for 90% of malignant renal neoplasms [2]. It occurs most frequently in the 5<sup>th</sup> and 6<sup>th</sup> decade of life; its' metastases may spread to any organ and are characterized by varied clinical manifestations and unusual metastatic sites [4]. A metastatic lesion may be the initial manifestation of asymptomatic renal cell carcinoma. Metastases may occur many years after the initial diagnosis and treatment of the primary tumor. Metastatic carcinomas to the thyroid gland are rarely observed. This may be explained by the rich blood supply, an associated high oxygen tension, and large amounts of tissue iodine in the thyroid thus rendering the thyroid gland a poor host for metastases. Usually thyroid metastases occur as a part of widespread disease with multiple visceral masses and nodal involvement. Intrathyroid metastases from renal cancer are uncommon, but have been reported previously. Secondary thyroid tumors should be considered in each patient who has a history of previous kidney malignancy. Immunohistochemistry is helpful in evaluating thyroid tumors in patients with a history of malignancies. Late presentation of metastatic disease in our patient limited the number of treatment options. Careful examination and the foresight for



**Figure 2.** Histologically metastatic tumor consisting of cells strongly positive for CD 95/APO [insert] and negative for thyroglobulin. H & E stain, magnification x 200 and 40 respectively

developing suspicion regarding metastases even after many years from primary tumor manifestation would facilitate additional tests and multidisciplinary treatment. Generally, if patient with a thyroid tumor has a history of malignancy, the possibility of metastatic disease should be taken under consideration.

Numerous clinical series have suggested that metastases to the thyroid gland are associated with a poor prognosis [12], as has also been proven in the case of our patient.

## Conclusion

Metastases to the thyroid gland are rare, but may be the manifestation of metastases (from the breast, lung, colon and, especially, renal cell carcinoma) even after a long time from previous surgical therapy. To the best of our knowledge, only few such cases have been reported in the literature, and none with such a long asymptomatic period. Thyroid nodules observed in a patient with a history of malignancy, especially many years after primary tumour diagnosis, have to be considered to be possible metastases. With the lengthening of the follow-up periods of cancer patients this complication may occur more often and thus our clinical awareness of this issue should increase.

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## References

1. Bayram F, Soyuer I, Atmaca H et al. Prostatic adenocarcinoma metastasis in the thyroid gland. *Endocr J* 2004; 51: 445-8.
2. Benoit L, Favoulet P, Arnould A et al. Metastatic renal cell carcinoma to the thyroid gland: report of seven cases and review of the literature. *Ann Chir* 2004; 129: 218-23.
3. Haugen B, Nawaz S, Cohn A et al. Secondary malignancy of the thyroid gland. *Thyroid* 1994; 4: 297-300.
4. Prati GF, Dean P, Ghimenton C. Thyroid metastases from renal carcinoma. *Urol Intern* 1988; 43: 347-8.
5. Valo I, Verrielle V, Giraud P et al. Thyroid metastases of an adrenocortical carcinoma 41 years after the diagnosis of the primary tumor. *Ann Pathol* 2004; 24: 264-7.
6. Wood K, Vini L, Harmer C. Metastases to the thyroid gland: the Royal Marsden experience. *Eur J Surg Oncol* 2004; 30: 583-8.
7. Haraguchi S, Hioki M, Yamashita K et al. Metastasis to the thyroid from lung adenocarcinoma mimicking thyroid carcinoma. *Jpn J Thorac Cardiovasc Surg* 2004; 52: 353-6.
8. Lester JW, Carter MP, Berens SV et al. Colon carcinoma metastatic to the thyroid gland. *Clin Nucl Med* 1986; 11: 634-5.
9. Poon D, Toh HC, Sim CS. Two case reports of metastases from colon carcinoma to the thyroid. *Ann Acad Med Singapore* 2004; 33: 100-2.
10. Jayaram G. Clear cell carcinoma of the minor salivary gland metastasing to the thyroid. *Diagn Cytopathol* 1995; 12: 85-6.
11. Wójcik EM. Fine needle aspiration of metastatic malignant schwannoma to the thyroid gland. *Diagn Cytopathol* 1997; 16: 94-5.
12. Lam KY, Lo CY. Metastatic tumours of the thyroid gland: a study of 79 cases in Chinese patients. *Arch Pathol Lab Med* 1998; 122: 37-41.

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