Thyroid metastasis from clear cell renal carcinoma

Metástasis tiroidea por carcinoma renal de células claras

To the Editor:

Clear cell renal cancer (CCRC) is a tumor with great metastatic potential, but solitary metastases, especially in the thyroid gland, are uncommon and difficult to diagnose. A patient with a solitary thyroid metastasis from CCRC is reported, and the literature is reviewed.

The patient was a 66-year-old male patient with a history of high blood pressure, chronic renal failure, hyperuricemia, current smoking and moderate alcohol consumption, atrial fibrillation, and early cognitive impairment due to Alzheimer’s disease. In 2005 the patient had undergone, at another hospital, left partial nephrectomy for a clear cell tumor. No subsequent adjuvant therapy was given, and abdominal ultrasound and computed tomography (CT) performed in April 2008 showed complete local remission. In October 2008, the patient attended the otolaryngology clinic reporting dysphonia having started one month earlier, with no dysphagia or odinophagia, associated constitutional symptoms, and two cervical tumors also detected in the previous month, a 3-4 cm tumor in the right thyroid lobe (RTL) and a 2-3 cm tumor in the left thyroid lobe (LTL), both hard and adherent to deep planes. Laboratory test results were normal, except for a TSH value of 9 microIU/mL with normal T4 and antithyroid antibodies, and a creatinine level of 1.7 mg/dL. Direct laryngoscopy detected paralysis in the right vocal cord with no other lesions. CT revealed a heterogeneous cervical mass at the expense of the RTL with laryngotraheal displacement and retrosternal extension, with subcentimetric cervical adenopathies and internal jugular vein (IJV) thrombosis (Fig. 1). Fine needle aspiration (FNA) was not diagnostic due to the lack of cells. Positron emission tomography combined with CT showed thyroid uptake with a low suspicion of malignancy. Based on a preoperative diagnosis of locally advanced thyroid neoplasm with no histological confirmation, total thyroidectomy with lymph node removal from the central and right lateral compartments was decided.

Surgery performed in July 2009 found in the RTL a solid, whitish tumor adherent to adjacent tissues, approximately

Figure 1  Cervical PET-CT image showing high uptake by a thyroid mass with infiltration of adjacent structures: trachea, esophagus, internal jugular vein, and prethyroid muscles.
6-7 cm in size, infiltrating the prethyroid muscles and a
tumor plaque between the cricoid cartilage and the first
tracheal ring. The LTL had a similar appearance but a
smaller lesion. The IJG had several brownish, non-adherent
and venous vessels and anterior jugular veins. The central
were trapped inside the tumor.

A pathological study found metastases from CCRC
(negative for thyroglobulin and thyroid transcription factor
1 (ttf-1), positive for clear renal cells) in both thyroid and
levels II to IV) and IJG resection and total thyroidectomy
were performed, including a large part of the right
prethyroid and cricothyroid muscles, muscle fibers of the
esophageal wall, and the right recurrent nerve, which was
trapped inside the tumor.

Adjuvant therapy was ruled out, and the patient died six
and a half months after surgery from septic shock of a
respiratory origin in the setting of his neurological disease.

Clear cell renal tumor accounts for 3% of all malignant
tumors in adults1,2. It is a highly vascularized tumor with an
unpredictable clinical progression and a high potential to
metastasize to lung, liver, bone, and adrenal gland3-4.

The incidence of solitary CCRC metastases ranges from 1%-4%,
and 1% of them involve the thyroid gland, although autopsy
studies have reported a 24% rate3-4. Approximately 150 cases
have been reported in the literature3-5. The tumors most
commonly metastasizing to the thyroid gland include skin
(39%), breast (21%), kidney (12%), and liver (11%)
tumors3,5,7.

Mean age at onset is in the sixth decade1,2. Thyroid disease
may either lead to diagnosis of CCRC or occur years after
nephrectomy1,2,4,8. The condition has no specific symptoms,
and may occur as painless palpable nodules associated to
compressive symptoms (dyspnea, dysphagia, dysphonia,
stridor) or cause no symptoms1,6. Thyroid function is usually
preserved1-4. The tumor appears as a hyper- or hypoechogenic
mass in ultrasound examination, and as a cold or
exceptionally hot nodule in scintiscans2,4,6,9. Isolated
cytological study of the sample collected by FNA has a high
specificity and a relatively good sensitivity4 (the presence of
clear cells in the primary thyroid follicular carcinoma)10,
and immunohistochemical procedures using thyroglobulin or
TTF-1 antibodies are required1,6. Bilateral thyroid
involvement has been reported in 18% of cases, while
invasion of adjacent vascular structures occurs in 11%3,4.

Clinical diagnosis of metastatic thyroid tumor is therefore
difficult7.

Survival depends on a disease-free period from
nephrectomy to the occurrence of metastasis and on radical
reseccion of the latter. Mean survival reported after
reseccion of metastasis is 6.4 years5,6,7.

In conclusion, a detailed clinical history is relevant for the
diagnosis of solitary thyroid metastases from CCRC because
of the non-specificity of supplemental tests. Only
immunohistochemical study of the thyroidectomy specimen
is valid. Preoperative diagnosis may be improved using
immunohistochemistry for thyroglobulin on FNA samples
from patients with a history of CCRC and thyroid nodules
with an aggressive behavior. Surgical treatment has the
highest survival rate, provided complete resection is
possible.

References

1. Duggal NM, Horattas MC. Metastatic renal cell carcinoma to the
3. Isesalnieks I, Winter H, Bareck E, Sotiropoulos GC, Goretzki PE,
Klinkhammer-Schalke M, et al. Thyroid metastases of renal cell
 carcinoma: clinical course in 45 patients undergoing surgery.
Assessment of factors affecting patients’ survival. Thyroid.
4. De Stefano R, Carluccio R, Zanni E, Marchiori D, Cicchetti G,
Bertaccini A, et al. Management of thyroid nodules as secondary
involvement of renal cell carcinoma: case report and literature
5. Miah MS, White SJ, Oommen G, Birney E, Majumdar S. Late
simultaneous metastasis of renal cell carcinoma to the
submandibular and thyroid glands seven years after radical
2010 Jul 25.
6. Heffess CS, Wenig BM, Thompson LD. Metastatic renal cell
carcinoma to the thyroid gland: a clinicopathologic study of 36
7. Dionigi G, Uccella S, Gandolfo M, Lai A, Bertocchi V, Rovera F,
et al. Solitary intrathyroidal metastasis of renal clear cell
 carcinoma in a toxic substernal multinodular goiter. Thyroid.
8. Rizzo M, Rossi RT, Bonaffini O, Scisca C, Sindoni A, Altavilla G,
et al. Thyroid metastasis of clear cell renal carcinoma: Report
 Thyroid metastases from clear cell renal carcinoma 18 years
10. Hughes JH, Jensen CS, Donnelly AD, Cohen MB, Silverman JF,
Geisinger KR, et al. The role of fine-needle aspiration cytology
in the evaluation of metastatic clear cell tumors. Cancer.
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