



An Italian Experience: Rare Cases of Metastasis to the Thyroid Gland from Renal Clear Carcinoma Some Years after Nephrectomy, As the First and Only Site of Metastasis

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Abstract

Renal cell carcinoma is known to cause metastasis to unusual sites, which can be both synchronous or metachronous. Thyroid gland is a rare site for metastasis, but when it occurs, renal cell carcinoma is the most common primary neoplasm. Report of 3 cases and review of the literature.

Keywords: Metastasis; Thyroid; Renal cell carcinoma

Introduction

Kidney cancer accounts for 5% and 3% of all adult malignancies in men and women, respectively, thus representing the 7th most common cancer in men and the 10th most common cancer in women. Renal Cell Carcinoma (RCC) accounts for 80% of all kidney cancers.

Common metastatic sites of RCC are lung, lymph nodes, bones and liver. Renal Cell Carcinoma (RCC) is responsible of in usually metastatic sites, as thyroid gland, even RCC is the most common primary neoplasm that metastasizes to thyroid gland [1]. The incidence of thyroid metastasis has been reported to be higher on autopsy studies [2] and ranges from 0.5% to 24% in high stage malignancies. They can occur many years after initial diagnosis, but are extremely rare in clinical practice.

A thyroid nodule in a patient with a history of RCC should be considered as potentially metastatic I report three cases, only cases in 15 years of observation of patients who developed recurrence of RCC with thyroid metastases some years after nephrectomy [3].

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Received Date: 02 May 2020

Accepted Date: 22 May 2020

Published Date: 27 May 2020

Citation:

Ricci I. An Italian Experience: Rare Cases of Metastasis to the Thyroid Gland from Renal Clear Carcinoma Some Years after Nephrectomy, As the First and Only Site of Metastasis. *Clin Oncol.* 2020; 5: 1706.

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Case Presentation

Case 1

A 61-year-old female was referred to our hospital in April 2004, because of weight loss and left flank pain. On abdominal Magnetic Resonance Imaging (MRI), there was an exophytic, hypervascular, solid mass, measuring 7 cm × 8 cm. The MRI findings were compatible with a malignant renal tumor. Two weeks later, the patient underwent left total nephrectomy.

The histopathological examination reported clear cell renal carcinoma. TNM staging was that of T3a G3 sec Fuhrman.

She was followed up by the oncologist for 10 years and no evidence of recurrence noted.

Ten years after, in November 2014, at the age of 71 years, the patient presented on PET/CT a metabolically active area in the thyroid right lobe.

Ultrasound imaging confirmed the presence of a solid hypoechoic, well- demarcated nodule (2.2 cm).

Subsequently, the patient underwent surgery of radical thyroidectomy.

The histopathological examination showed metastatic RCC of clear cell type then in May 2017 the patient underwent thoracotomy for atypical double resection of the upper lobe and left pulmonary lingular following the detection of two nodules. TNM staging was that of T1a lung lipid adenocarcinoma and other nodule instead was comparable with metastasis from RCC.

The subsequent follow up was negative. The mean latency time before the detection of thyroid metastases was 10 years [4].

Case 2

A 76-year-old male in March 2016 underwent a right total nephrectomy for a solid mass clear cell renal carcinoma.

TNM staging was that of T3aN0M0.

In April 2018 the same patient underwent laparoscopy and subsequently to lower pole resection of the left kidney. The histopathological examination reported papillary carcinoma.

One year after, in April 2019, was found a solid nodule in the right lobe of the thyroid gland (4.5 cm × 3 cm × 3.5 cm).

The patient at the age of 79 years underwent thyroidectomy. The histopathological examination reported metastatic RCC of clear cell type, after 3 years from nephrectomy.

The subsequent follow up was negative.

The mean latency time before the detection of thyroid metastases was 3 years.

Case 3

A 78 year-old female presented to our hospital with a history of something in her neck for almost 3 months in May 2014.

Examination revealed evidence of a 3 cm nodule in the right thyroid lobe. On positron emission tomography/computed tomography there was metabolically active area in the thyroid right lobe.

Ultrasound imaging confirmed a solid hypoechoic nodule.

The patient subsequently underwent fine needle aspiration cytology which showed suspicious cells but was not diagnostic.

A thyroidectomy was therefore carried out.

The histopathological examination showed metastatic RCC of clear cell type.

The patient gave history of RCC on the right side-almost 10 years ago.

At that time she had undergone left radical nephrectomy and left adrenalectomy for a large renal mass measuring 11 cm × 7 cm × 7 cm.

The histology at that time showed clear cell RCC G2 sec Fuhrman.

She was followed up by the oncologist for almost 10 years and no evidence of recurrence noted.

Tumor was not infiltrating through the capsule. Surgical margins were free of tumor.

TNM staging was that of T2bN0M0.

Also in this case as in the first, the mean latency time before the detection of thyroid metastases was 10 years.

The subsequent follow up was negative.

Discussion

RCC accounts for approximately 3% to 4% of all adult malignancies. It is more common in males compared to females and occurs predominantly in the 6th to 8th decade of life.

Major histopathological subtypes include clear cell carcinoma (Figure 1), papillary carcinoma, chromophobe carcinoma, medullary carcinoma.

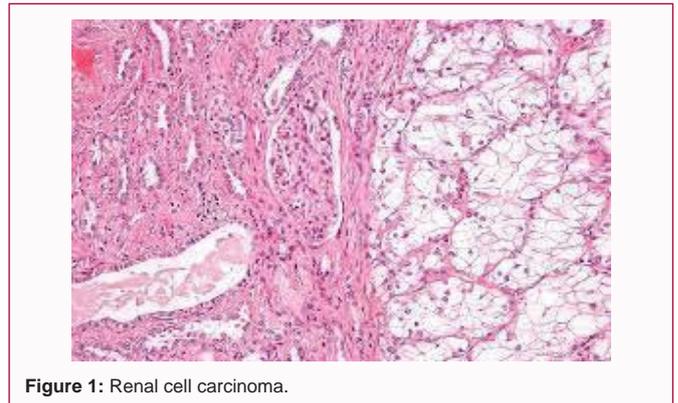


Figure 1: Renal cell carcinoma.

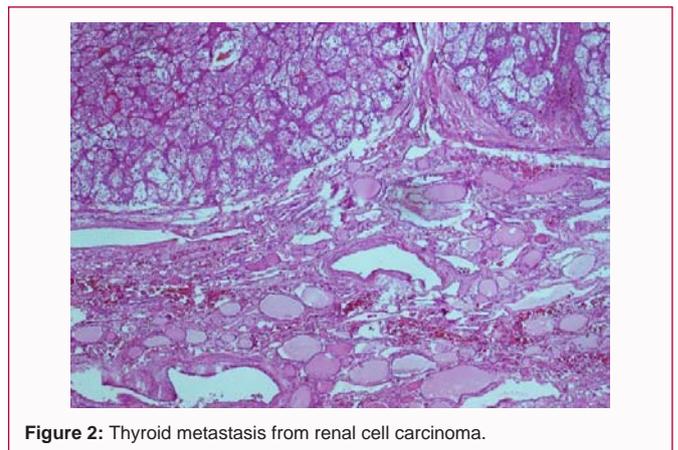


Figure 2: Thyroid metastasis from renal cell carcinoma.

The metastasis may be detected at the time of diagnosis (synchronous) or may be found years after the diagnosis and treatment (metachronous) [5].

It has been estimated that 20% to 30% of patients including those who have undergone nephrectomy with curative intent will develop recurrence and out of these 50% will relapse distantly [6].

Moreover, solitary metastasis from RCC occurs with an incidence rate of about 1% to 4% of which about 1% occurs in the thyroid gland.

Most of the recurrences are within 3 years of surgery, but delayed recurrences even after decades have been reported [7].

RCC metastases to thyroid generally are asymptomatic and are discovered incidentally. Rarely may present dysphagia, dysphonia or dyspnea.

Usually metastatic thyroid lesions appear as solid hypoechoic, well- demarcated nodules with irregular vascularity on ultrasound imaging and cold nodules on radioisotope uptake studies.

These radiological features are nonspecific and it's not possible to distinguish between primary and secondary thyroid neoplasms on imaging. FNA cytology is necessary to establish preoperative diagnosis.

Sometimes it is difficult to distinguish metastasis from tumors of thyroid, because can have clear cell component on FNA cytology alone.

In these cases, immunohistochemistry is helpful and aids in differential diagnosis.

In our cases cytocheratin, vimentin and CD 10, traditional

immunohistochemical markers for renal cell carcinoma, were positive; thyroglobulin, Thyroid Transcription Factor-1 (TTF-1), and calcitonin, markers used for identifying primary thyroid malignancies, were negative.

Definitive diagnosis of metastatic RCC is usually made by histopathological examination after thyroidectomy [8] (Figure 2).

Surgical resection with either partial or total thyroidectomy should be performed if thyroid gland is the only site for metastasis.

Prognosis is good in this group [9,10]. Patients with disseminated disease have poor prognosis and should undergo thyroidectomy only for palliation for compressive symptoms.

Conclusion

A thyroid nodule in a patient with a history of RCC should be considered as potentially metastatic. Its impossible distinguishes between primary and secondary thyroid neoplasms on imaging; infact clinical manifestation and radiographic findings are nonspecific.

FNA cytology and immunohistochemistry are helpful in establishing diagnosis and should be obtained in suspected cases.

The mean latency time before the detection of thyroid metastases was variable. That lifelong follow-up is recommended.

Our cases demonstrate the importance of considering RCC metastases to the thyroid even years after nephrectomy to mitigate potential delays in diagnosis.

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