

Metastatic renal cell carcinoma to the thyroid gland _____

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Background

The thyroid nodules are frequent in general population. The nodules are more prevalent in women and the prevalence of thyroid nodules increased with age and detection are increased in people who underwent thyroid ultrasound, even for diagnostic imaging unrelated to the thyroid. (1)

Most thyroid nodules are benign and around 5 % of all nodules are cancer. Approximately 90 % of thyroid cancer are differentiated thyroid cancer. Metastasis to thyroid are rarely observed in the clinical practice. The incidence of metastasis to thyroid gland is 0.36 % in all thyroid malignancies. (2)

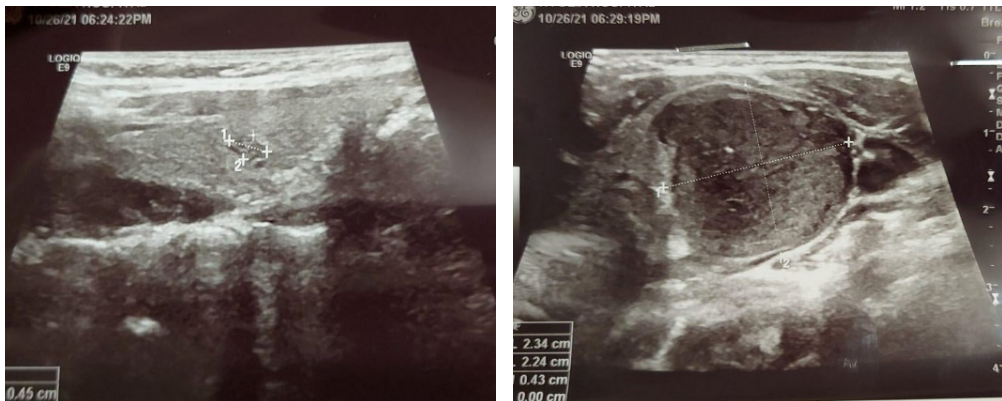
Case Presentation

A woman 42 years old present to the consultation, because she had noticed an increase of left lobe of the thyroid gland for the last months. She hadn't known history for thyroid disease. She hadn't fever, no pain or tachycardia.

During physical examination nodule around 2 cm in the left lobe of thyroid was detected during palpation. Clinically the function of thyroid was normal. Laboratory test confirmed normal values of serum thyroid –stimulation hormone (TSH) and FT4 (Free thyroxine) and increase values of anti –thyroid peroxidase (TPO) antibodies.

The ultrasound of the neck was performed and an oval shaped hypoechoic solid nodules with dimensions 2.34 x 2.24 cm in the left lobe of thyroid was diagnosed and one nodule below 1 cm to the right lobe of thyroid. The nodule had well-defined smooth margin without calcification and increased vascularity. No suspicious lymph node was detected to the neck.

FIGURE 1- Thyroid ultrasound (A, B)



A. An oval hypoechoic solid nodules with dimensions 2.34 x 2.24 cm in the left lobe of thyroid

B. Right lobe of thyroid with a nodule 0.45 x 0.29 cm

Her past medical history: The patient referred than eight years before she underwent surgery: Left nephrectomy for a renal cell carcinoma.

During follow up, she denied know metastasis from renal carcinoma, but last follow up was performed three years ago, and the positron emission tomography (PET), wasn't performed before. The patient was advice to performed FNA – Biopsy. The result of biopsy was suspicious for malignancy. Based on result of FNA-Biopsy the patient underwent surgery- total thyroidectomy.

The pathology findings were consistent with a solitary metastasis most compatible with a clear cell carcinoma from her previous renal carcinoma and the chronic lymphocytic thyroiditis.

The immunohistochemistry findings ruled out primary thyroid cancer: CD-10 positive, EMA positive, Thyroglobulin negative, HBME-1 negative.

1.5 months after thyroid surgery the positron emission tomography (PET) with 2-deoxy-2-[fluorine-18] fluoro-D-glucose (^{18}F -FDG) was performed where focal ^{18}F -FDG uptake was seen in the thyroid bed, but didn't find other metastasis. The ultrasound of the neck, doesn't detected thyroid tissues and without pathological lymph node.

The lab results (after surgery): TSH = 5.9 m UI/ml (normal range 0.17-4.2); Ac TPO antibodies = 90 UI/ml (Normal range < 70), Thyroglobulin <0.2 ng /ml (Normal range 0-5); Thyroglobulin antibodies = 32 UI/ml (Normal range < 70).

The patient after surgery was treated with levothyroxine and continue the follow up by oncologist.

Discussion

Thyroid nodules are frequent findings on thyroid ultrasound and the increased use of imagin studies has increased the frequency of thyroid nodules. The incidence of thyroid cancer has been increased faster last years, but this has been referred as an overdiagnosis of low risk thyroid cancer and identification of subclinical disease (3, 4).

Papillary carcinoma is the most common subtype of primary malignancies of thyroid cancer. Thyroid metastasis is uncommon, the incidence of thyroid metastasis ranges from 0.15 to 6 %, depending on the study. Usually the metastasis to the thyroid gland originates from renal cell carcinoma, lung cancer or breast cancer (5).

The incidence of renal cell carcinoma increased with age. Renal cell carcinoma is the most common cancer of the urinary system. Most of renal cell carcinoma are detected during screening test, but distant metastasis may be seen frequently even years after detection of primary tumor (6, 7).

Clinically there is no difference between primary and metastasis cancer of the thyroid gland. There is no difference even on radiological data's and sometimes even fine needle aspiration biopsy can't differentiated primary tumor from metastasis (8). Now days the immunohistochemical studies help the right diagnosis (9). After detection of isolated metastasis to the thyroid gland, thyroidectomy is recommended. The survival rate after thyroidectomy may prolong after aggressive treatment for solitary thyroid metastasis (10).

Conclusion

Thyroid metastasis from renal cell carcinoma is uncommon finding. Renal cell carcinoma can metastasize to distant organs even many years after detection of primary cancer. If the patient had only isolated metastasis to the thyroid gland, thyroidectomy is recommended to improve the prognosis of the patient.

References

1. C Durante and al. The Diagnosis and Management of Thyroid Nodules: A Review. *JAMA*. 2018 Mar 6;319(9):914-924. doi: 10.1001/jama.2018.0898).
2. Ch A Ghossein and al. Metastasis to the thyroid gland: a single-institution 16-year experience. *Histopathology*. 2021 Mar;78(4):508-519. doi: 10.1111/his.14246. Epub 2020 Nov 9)
3. Davies L, Welch HG. Current thyroid cancer trends in the United States. *JAMA otolaryngology– head & neck surgery*. 2014;140(4):317–322. [PubMed] [Google Scholar]
4. B R Roman and al. The thyroid cancer epidemic, 2017 perspective. *Curr Opin Endocrinol Diabetes Obes*. 2017 Oct;24(5):332-336. doi: 10.1097/MED.0000000000000359
5. Ok Kyu Song and al. Metastatic renal cell carcinoma in the thyroid gland: ultrasonographic features and the diagnostic role of core needle biopsy. *Ultrasonography*. 2017 Jul; 36(3): 252–259. Published online 2016 Nov 9. doi: 10.14366/usg.16037
6. Chung A Yand al Metastases to the thyroid: a review of the literature from the last decade. *Thyroid*. 2012;22:258–268. <https://doi.org/10.1089/thy.2010.0154>. [PubMed] [Google Scholar]
7. Koul H and al. Molecular aspects of renal cell carcinoma: a review. *Am J Cancer Res*. 2011; 1:240–254. [PMC free article] [PubMed] [Google Scholar]
8. A Solmaz and al. Isolated thyroid metastasis from renal cell carcinoma. *Turk J Surg*. 2017; 33(2): 110–112. Published online 2015 Jul 6. doi: 10.5152/UCD.2015.2962
9. Heffess CS an al. Metastatic renal cell carcinoma to the thyroid gland: a clinicopathologic study of 36 cases. *Cancer*. 2002; 95:1869–1878. <https://doi.org/10.1002/cncr.10901>. [PubMed] [Google Scholar]
10. D Macedo-Alves and al. Thyroid metastasis from renal cell carcinoma-A case report after 9 years. *Int J Surg Case Rep*. 2015;16:59-63. doi: 10.1016/j.ijscr.2015.09.004. Epub 2015 Sep 18. PMID: 26421840