International Journal of Surgery Case Reports 126 (2025) 110700

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.elsevier.com/locate/ijscr

Case report

A unique case report in a 63-year-old male: Thyroid-like renal carcinoma mimicking thyroid neoplasm

Mustafa Ziad Mahmoud [a], Shkri Jaweesh [b,*], Mouhammad Trabulsi [c], Amr Almalla Hassani [d], Yazen Alhomsi [e], Khaled Alhomsi [f]

[a] Urologist - Kidney Transplant Specialist-Damascus hospital, Damascus, Syria
[b] Faculty of Medicine, Al-Sham Private University, Damascus, Syria
[c] Urologist - Damascus hospital, Damascus, Syria
[d] Faculty of Medicine, Al-Sham Private University, Damascus, Syria
[e] Faculty of Medicine, Al-Sham Private University, Damascus, Syria
[f] Vice President Of Education Quality and Scientific Research Council, Al-Sham Private University, Damascus, Syria

ARTICLE INFO

Keywords:
Case report-thyroid-like follicular
Renal cell carcinoma
Hypertension

ABSTRACT

Introduction and significance: Thyroid-like follicular carcinoma of the kidney is an exceedingly rare neoplasm. Only a few cases have been reported in the literature. This tumor often presents with no specific symptoms and is frequently discovered incidentally during imaging studies. Diagnosis relies primarily on histological examination and the exclusion of thyroid markers.

Case presentation: We present the case of a male patient who presented with flank pain and hematuria. A right renal mass was identified and subsequently underwent complete surgical resection. Histological analysis of the mass revealed Thyroid-like follicular carcinoma.

Clinical discussion: Despite its rarity, thyroid-like follicular carcinoma of the kidney should be considered in the differential diagnosis of renal lesions.

Conclusion: The low-grade malignancy and low metastatic potential associated with this tumor are encouraging factors. Further studies are necessary to better understand the pathogenesis of this rare neoplasm. Such knowledge is crucial for improving patient outcomes and investigating potential associations with conditions like hypertension.

1. Introduction

Thyroid-like follicular carcinoma of the kidney (TLFCK) is an exceedingly rare subtype of renal cell carcinoma. It is characterized by its morphological resemblance to well-differentiated follicular thyroid carcinoma but lacks thyroid marker expression [1]. Given the limited number of reported cases, the clinical behavior of TLFCK remains uncertain [2]. In 2004, several cases of a unique renal epithelial tumor were described. Microscopically, these cases exhibited histological features reminiscent of follicular lesions in a well-differentiated thyroid gland [3]. However, TLFCK was not included in the WHO classification of renal tumors until 2016 [4].

In this report, we present a rare case of TLFCK and conduct a comprehensive review of the medical literature to enhance our understanding of this uncommon tumor type.

This case is described in accordance with the criteria of SCARE [5].

2. Case presentation

2.1. Patient information

We present the case of a 63-year-old male with a 5-year history of hypertension and a 2-month history of urinary difficulty. Two weeks prior to presentation, the patient developed flank pain and hematuria without any other associated symptoms. There was no family history of abnormalities or tumors.

* Corresponding author.
E-mail addresses: shkri.jaweesh.fom@aspu.edu.sy (S. Jaweesh), yazen.alhomsi.fom@aspu.edu.sy (Y. Alhomsi), k.a.foph@aspu.edu.sy (K. Alhomsi).

https://doi.org/10.1016/j.ijscr.2024.110700
Received 21 October 2024; Received in revised form 23 November 2024; Accepted 28 November 2024
Available online 2 December 2024
2210-2612/© 2024 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Limited. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

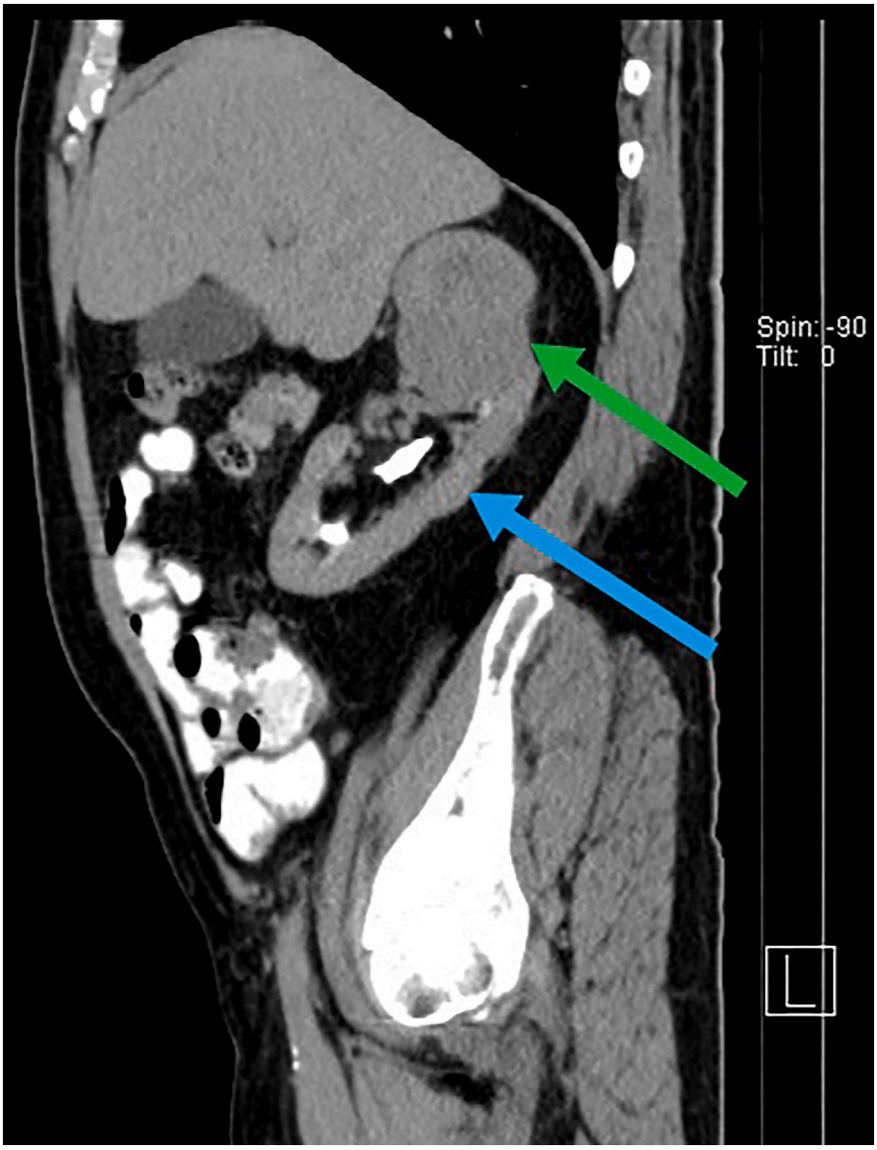

Fig. 1. A: CT cross-sagital view of the abdomen showing a 6 × 6 × 5 cm heterogeneous mass in the upper pole of the right kidney (The blue arrow indicates the kidney and the green arrow indicates the tumor). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

3. Clinical findings

3.1. Clinical examination

Upon hospital arrival, the patient's general condition was good. Abdominal examination revealed no pain points in the abdomen or flank, and the patient was able to urinate normally.

4. Diagnostic evaluation

4.1. Laboratory examinations

Laboratory results were within normal limits.

4.2. Abdominal ultrasonography

Abdominal ultrasonography demonstrated a right renal mass measuring approximately 4 × 5 cm. No other pathological findings were identified in the abdomen or left kidney.

4.3. Computed tomography (CT)

Computed tomography (CT) revealed a right renal mass measuring 4 × 7 × 4 cm and exhibiting a heterogeneous appearance. No abnormalities were noted in the spine or lungs (Fig. 1 A).

4.4. Therapeutic intervention

Based on the above findings, surgery was indicated. The surgical procedure was performed through a right-sided flank incision, accessing the right kidney via the posterior peritoneum. The kidney was isolated from surrounding structures, found to be completely enshrouded by the mass, and surgically removed along with its associated vessels without complications.

The tumor was well-defined, exhibiting a brown focus and hemorrhagic cystic formations (Fig. 2 A).

The tumor displayed follicles of varying sizes, resembling follicular formations with colloid-like substances inside (Fig. 3 A-B). Immunohistochemical staining studies were negative for PSA (Fig. 4 A) and TTF1 (Fig. 4 B), while positive for vimentin (Fig. 4 C) and CK7 (Fig. 4 D).

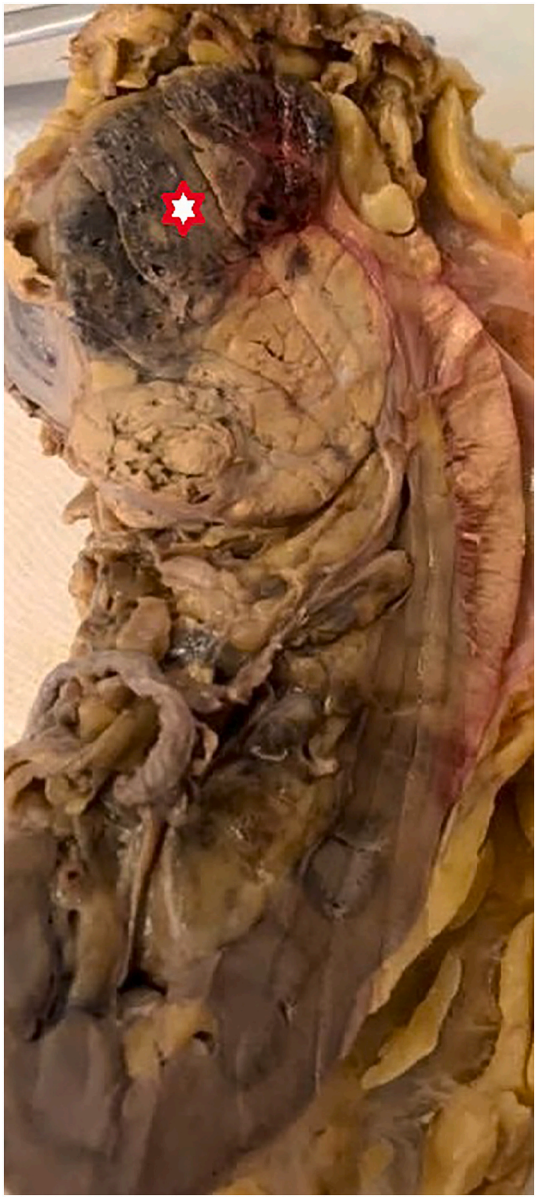

Fig. 2. A: Macroscopic view of the tumor.

5. Discussion

Renal cell carcinoma (RCC), accounting for approximately 85 % of all kidney and renal pelvis malignancies in adults [6], is the most common histological type. Other less common histologic types include transitional cell carcinoma and Wilms' tumor [7]. RCC can be further classified into subtypes, with clear cell RCC being the most prevalent at around 60 %, followed by papillary RCC and other rarer types. Thyroid-like follicular RCC (TLFCK) is an exceedingly rare subtype first described in 2006 [8].

Data indicate a higher prevalence of TLFCK in women compared to men, typically affecting young and middle-aged individuals with an average age of infection around 43 years [2–8]. These tumors are often discovered incidentally, are usually small and confined to the kidneys, and rarely present with large tumor sizes . Some TLFCK cases have been associated with urinary symptoms, particularly hematuria and flank pain. One reported case linked hypertension to TLFCK, which resolved following tumor removal .

US, CT, or MRI can be used to detect TLFCK. However, CT is generally preferred for identifying and characterizing renal tumors [9,10]. Most cases involve a single renal lesion, with a higher incidence in the right kidney compared to the left. These tumors tend to occur primarily in the middle pole and peripheral region of the kidney [11,12].

The differential diagnosis for TLFCK includes metastatic thyroid carcinoma, eosinophilic renal cell tumors, clear cell RCC or papillary metastatic thyroid carcinoma arising in the ovarian stroma, and carcinoid tumors of the kidney. Additionally, thyroidization, a diffuse and bilateral condition often associated with end-stage primary disease or pyelonephritis, must be considered. In contrast, TLFCK is usually a well-demarcated mass on one side that is discovered incidentally [13].

TLFCK tumors lack follicular-like structures or eosinophilic colloid-like substances and typically present with well-defined, thick capsules that exhibit a homogeneous texture and minimal necrosis [3]. Microscopically, these tumors consist of small to medium-sized follicles containing an eosinophilic, amorphous, colloid-like substance. They may also be associated with calcifications, psammomas, cholesterol crystals, or hemorrhagic necrosis, and some may show infiltration of large numbers of lymphocytes [3–8]. Immunohistochemical staining studies have shown that TLFCK is consistently positive for PAX8 but negative for

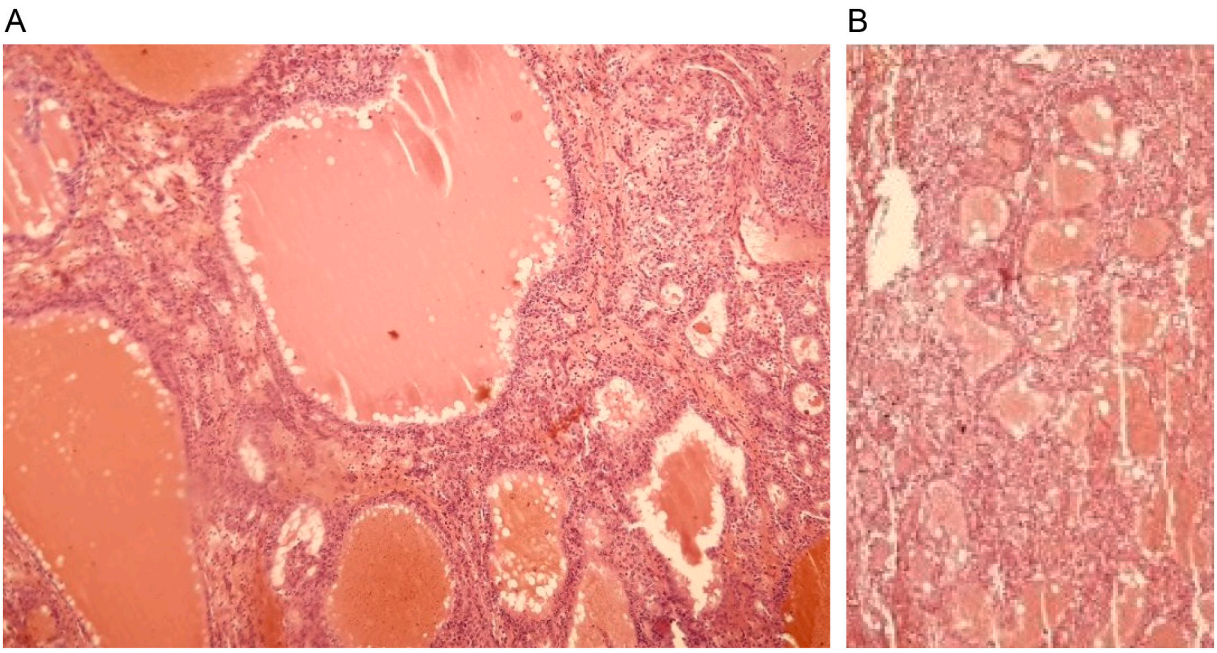

Fig. 3. A-B: H&E stain revealing follicles filled with a fluid-like colloid in the area of tumor formation.

the thyroid-specific markers TG and TTF1. The majority of cases are positive for CK7, EMA, VIMENTIN, and CK19. Tumor diagnosis is primarily based on morphological analysis and staining for PAX8, TG, and TTF1 [11].

Surgical treatment is the primary approach for TLFCK, involving either radical or partial excision. For tumors with distant metastases or invasive growth, radical excision is performed. However, tumors less than 6 cm in diameter, with a complete capsule and without metastases, may be treated with partial resection or lumpectomy . Data suggest that TLFCK has a low degree of malignancy, a low recurrence rate, and a low rate of metastasis [11].

In our case, the right kidney was radically removed, and the patient was followed for approximately one year without evidence of tumor metastases or persistent hypertension, suggesting that hypertension may be associated with this tumor type.

6. Conclusion

The diagnosis of thyroid-like follicular carcinoma of the kidney (TLFCK) is primarily based on clinical history, histological examination, and immunohistochemistry. This tumor is characterized by its low malignancy and metastatic potential. Surgical excision is considered the primary treatment approach. The choice between surgical removal of the tumor (partial nephrectomy) or radical nephrectomy depends on the specific characteristics of the case.

Abbreviations

TLFC	Thyroid-like follicular carcinoma
TTF-1	thyroid transcription factor-1.

Author contribution

Shkri Jaweesh: Conceptualization, resources, who wrote, original drafted, edited, visualized, validated, literature reviewed the manuscript, and the corresponding author who submitted the paper for publication.

Mustafa Ziad Mahmoud: Supervision, visualization, validation, resources, and review of the manuscript.

Mouhammad Trabulsi and Amr Almalla Hassani: Visualization, validation, and review of the manuscript.

Yazen Alhomsi: Visualization, validation, and review of the manuscript.

Khaled Alhomsi: Vice President Of Education Quality and Scientific Research Council, Supervising, writing and proofreading the manuscript.

All authors read and approved the final manuscript.

Consent of patient

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical approval

Ethical approval for this study (Ethical Committee N° NAC 207) was provided by the Ethical Committee NAC of Al sham private university, Damascus, SYRIA on 21 October 2024.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Guarantor

Shkri Jaweesh.

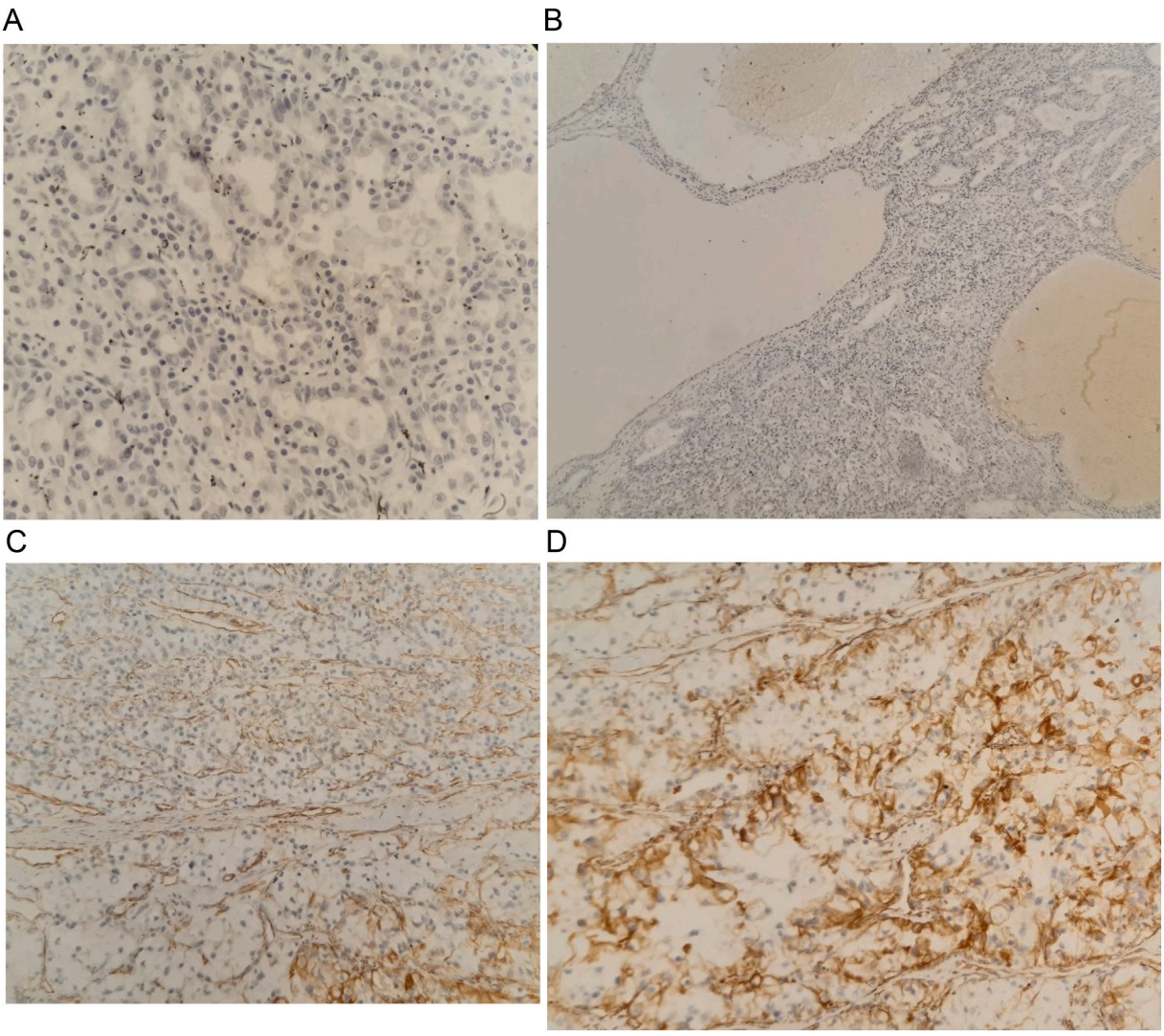

Fig. 4. A: Immunohistochemical stain negative for PSA.
B: Immunohistochemical stain negative for TTF1.
C: Immunohistochemical stain positive for vimentin.
D: Immunohistochemical stain positive for CK7.

Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of competing interest

The authors declare that they have no competing interests.

Availability of data and materials

The datasets generated during and/or analyzed during the current study are not publicly available because the Data were obtained from the hospital computer-based in-house system. Data are available from the corresponding author upon reasonable request.

References

[1] T.M. Jenkins, J. Rosenbaum, P.J. Zhang, L.E. Schwartz, A. Nayak, K. Cooper, S. K. Tickoo, P. Lal, Thyroid-like follicular carcinoma of the kidney with extensive sarcomatoid differentiation: a case report and review of the literature, Int. J. Surg. Pathol. 27 (6) (2019) 678–683, https://doi.org/10.1177/1066896919845490.

[2] H. Wang, J. Yu, Z. Xu, G. Li, Clinicopathological study on thyroid follicular carcinoma-like renal tumor related to serious hypertension: case report and review of the literature, Medicine 96 (12) (2017) e6419, https://doi.org/10.1097/MD.0000000000006419.

[3] M.B. Amin, R. Gupta, H. Ondrej, J.K. McKenney, M. Michal, A.N. Young, G. P. Paner, K. Junker, J.I. Epstein, Primary thyroid-like follicular carcinoma of the kidney: report of 6 cases of a histologically distinctive adult renal epithelial neoplasm, Am. J. Surg. Pathol. 33 (3) (2009) 393–400, https://doi.org/10.1097/PAS.0b013e31818cb8f5.

[4] T.M. Jenkins, J. Rosenbaum, P.J. Zhang, L.E. Schwartz, A. Nayak, K. Cooper, S. K. Tickoo, P. Lal, Thyroid-like follicular carcinoma of the kidney with extensive Sarcomatoid differentiation: a case report and review of the literature, Int. J. Surg. Pathol. 27 (6) (2019) 678–683, https://doi.org/10.1177/1066896919845490.

[5] Sohrabi, C., Mathew, G., Maria, N., Kerwan, A., Franchi, T., Agha, R. A., & Collaborators (2023). The SCARE 2023 guideline: updating consensus surgical CAse REport (SCARE) guidelines. International journal of surgery (London, England), 109(5), 1136–1140. doi:https://doi.org/10.1097/JS9.0000000000000373 . doi:https://doi.org/10.1308/rcsann.2023.0021.

[6] A. Jemal, R. Siegel, E. Ward, T. Murray, J. Xu, M.J. Thun, Cancer statistics, 2007, CA Cancer J. Clin. 57 (2007) 43–66.

[7] W. Sterlacci, I. Verdorfer, M. Gabriel, G. Mikuz, Thyroid follicular carcinoma-like renal tumor: a case report with morphologic, immunophenotypic, cytogenetic, and scintigraphic studies, Virchows Archiv : an international journal of pathology 452 (1) (2008) 91–95, https://doi.org/10.1007/s00428-007-0486-4.

[8] Jung, S. J., Chung, J. I., Park, S. H., Ayala, A. G., & Ro, J. Y. (2006). Thyroid follicular carcinoma-like tumor of kidney: a case report with morphologic, immunohistochemical, and genetic analysis. Am. J. Surg. Pathol., 30(3), 411–415.

doi:https://doi.org/10.1097/01.pas.0000194745.10670.ddAm J Surg Pathol 2006;30:411–5.

[9] J. Dhillon, N.M. Tannir, S.F. Matin, P. Tamboli, B.A. Czerniak, C.C. Guo, Thyroid-like follicular carcinoma of the kidney with metastases to the lungs and retroperitoneal lymph nodes, Hum. Pathol. 42 (1) (2011) 146–150, https://doi.org/10.1016/j.humpath.2010.01.026.

[10] Wang H, Yu J, Xu Z, Li G. Clinicopathological study on thyroid follicular carcinoma-like renal tumor related to serious hypertension: case report and review of the literature. Medicine (Baltimore) 2017 Mar;96(12):e6419. doi: 10.1097/MD.0000000000006419. PMID: 28328844; PMCID: PMC5371481.

[11] Y. Zhang, J. Yang, M. Zhang, Z. Meng, W. Song, L. Yang, L. Li, D. Wang, T. Shi, Thyroid follicular carcinoma-like renal tumor: a case report and literature review, Medicine 97 (21) (2018) e10815, https://doi.org/10.1097/MD.0000000000010815.

[12] O. Fadare, S. Lam, C. Rubin, Papillary renal cell carcinoma with diffuse clear cells and thyroid-like macrofollicular areas, Ann. Diagn. Pathol. 14 (2010) 284–291.

[13] H.G. Laberke, T. Klingebiel, G. Quack, A contribution to the morphology and pathogenesis of thyroid-like lesions in the kidney, Pathol. Res. Pract. 176 (1983) 284–296.