Papillary renal cell carcinoma with testicular and penile metastases: A case report and literature review

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ABSTRACT

The most common site of Metastatic Renal Cell Carcinoma (mRCC) are lung, bone, liver, and brain. We report an extremely rare case of a 69-year-old man who presented mRCC to testicle and penis. He had a left-sided testicular mass in addition to left-sided abdominal fullness. He underwent a percutaneous renal biopsy with pathologic result was papillary RCC. The patient started on targeted therapy with Lenvatinib. Because there was no progress in this treatment, the patient came to our clinic. Subsequently, we performed left cytoreductive nephrectomy and radical left orchiectomy, and total penectomy. The definitive pathologic result confirmed papillary RCC.

1. Introduction

Renal cell cancer represents 2–3% of all cancers, with the highest incidence in Western countries. Typically, the most common sites of metastatic RCC are lung, bone, regional lymph nodes, liver, and brain. About 25%–30% of patients will present with metastatic disease at the time of diagnosis. Testicular metastasis from RCC is extremely rare; only 33 cases have been described in the literature. There was only 1 case whichever reported that sarcomatoid RCC with extension into the penis. There is currently no literature that describes the metastasis of pRCC to both testis and penis, which is why this case is exceptionally unique and worthy of documentation.

2. Case presentation

A 69-year-old man was referred to our urology clinic. He had a left-sided testicular mass, in addition to left-sided abdominal fullness. The patient believed that he first detected the testicular lump about 12 months before coming to the clinic and that it had been continuing to grow, and within the last three years also noticed a left abdominal bulge. He has a history of abdominal flank pain and recent weight loss. He denied lower urinary tract symptoms, hematuria, and urinary retention, or priapism. There was a definite mass overlying the left abdominal flank area. The physical exam also demonstrated a hard mass at the shaft penis without ulcerations or rash. He had a 7 cm left testicular mass with some fluid and heterogeneity inconsistency. The contralateral testicle was normal, and there was no palpable inguinal adenopathy. Mass at the penis and left testicle were distinctly separated.

The patient had normocytic anemia, hemoglobin of 10.7 gr%, hematocrit of 31.5. Besides, his levels of ALP and LDH were elevated at 163 U/L and 512 U/L, respectively. The calcium level was average at 2.17 mmol/L.

CT of the Abdomen Pelvis reveals numerous nodules scattered in both lobes of the liver, the largest in segment 5/6, measuring 4.4 × 2.8 cm in size. Large heterogeneous left renal mass is noted, with eccentric calcifications, measuring 13.3 × 10.0 × 10.0 cm in size (Fig. 1). The right kidney has normal enhances, with no focal lesion evident.

He underwent a core biopsy in July 2018 from the left kidney with the pathology result type 2 papillary renal carcinoma. Following the pathology results, the patient was referred to a medical oncologist and treated with Lenvatinib.

Because there was no significant progress in targeted therapy, the patient came to our clinic. Subsequently, we performed an open left cytoreductive nephrectomy and left radical orchiectomy in November 2018. Two weeks later, we did a total penectomy. After surgery, the patient refused to do another adjuvant therapy. He died two months later.

3. Pathologic findings

3.1. Kidney

Macroscopic findings of a left kidney from radical nephrectomy were incised and left with little supporting structure with dimensions of 13 × 10 × 8 cm. A 7 cm lesion was noted at the left renal cortex with partially solid and hemorrhagic necrosis. The tumor was coming across the calyces, and there was no extension to the renal capsule. The patient had normal renal parenchyma with no pathological findings.
11 × 9 cm with a soft and firm consistency. Outward appearance still within normal limits. No lymphoid nodes were found macroscopically.

3.2. Testis

Macroscopic findings of the left testicle were soft and firm tissue with partly cystic mass with dimensions of 7 × 3x3 cm and with a length of 5 cm and surface area of 2.5 cm (Fig. 2a).

3.3. Penis

Macroscopic findings of the penis were brownish with soft consistency with dimensions of 18 × 1 × 9 cm. On the proximal part, 15 lymph nodes with a diameter of 0.3–1 cm and with tumor cell invasion were found (Fig. 2b).

The microscopic examination of tissue samples has revealed necroses and bleeding processes. Islands of proliferating polygonal cells are found in several locations with clear cytoplasm, polymorphic nucleus without...
mitotic activity (Fig. 3).

4. Discussion

Metastatic disease to the testes is uncommon, with an estimated incidence rate of 0.3%–3.6%.2 Testicular metastasis from RCC is extremely rare; only 33 cases have been described in the literature. The clinical presentations of these cases vary; however, the most common method of discovery was the incidental finding of metastatic RCC in the orchiectomy pathology.

The rarity of RCC spreading to the testis presents a unique challenge of accurately recognizing the metastatic disease. As in our case, the patient was 68, the probability of a primary germ cell tumor of the testicle was unlikely. Non-Hodgkin lymphoma remains the most commonly diagnosed testicular neoplasm in patients over 50.3

When evaluating an elderly patient with a testicular mass, physicians should consider the possibility of metastatic disease in the differential diagnosis, especially in the setting of suspected or remote malignancy.2 The exact method of spread of RCC to the testes is mainly unknown, therefore adding to the difficulty of its recognition.2 One proposed explanation is through a mechanism of retrograde descent whereby tumor cells can directly seed via descent through the testicular veins. This theory appears to be the most plausible for ipsilateral deposits of metastasis.3

RCC metastasis to the penis is unique for many reasons. There has never been a published report on papillary RCC with expansion into the penis except sarcomatoid RCC.5 This presentation supports the idea that hematogenous spread through an invasion of the arterial system. On the other hand, it is probable that due to an increased intraabdominal pressure secondary to the large size of the tumor, and tumor emboli preferentially spread in a retrograde fashion from the renal vein to the pudendal veins and finally the dorsal vein of the penis.5

5. Conclusion

Papillary RCC metastatic spread to the testes and penis is a rare entity. It serves as an important reminder for all physicians regarding the importance of a thorough genitourinary physical examination, which can often be overlooked in males.

Consent

This case report has approved by Hasan Sadikin General Hospital Ethical committee, as well as an informed consent letter from the patient.

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Declaration of competing interest

There are no conflicts of interest.

References

1. Ljungberg B, Albiges L, Abu-Ghanem Y, et al. European association of urology guidelines on renal cell carcinoma: the 2019 update. *Eur Urol*. 2019;75(5):799-810.
2. Rouvinov K, Neulander EZ, Kan E, Asali M, Ariad S, Mermershtain W. Testicular metastasis from renal cell carcinoma: a case report and review of the literature. *Case Rep Oncol*. 2017;10(1):388-391.
3. Ulbright TM, Young RH. Metastatic carcinoma to the testis: a clinicopathologic analysis of 26 nonincidental cases with emphasis on deceptive features. *Am J Surg Pathol*. 2008;32(11):1683–1693.
4. Marzouk K, Alyami F, Merrimen J, Bagnell S. Metastatic renal cell carcinoma to the testis: a case report and review of the literature. *Can Urol Assoc J*. 2014;8(11-12):E924-E927.
5. Liou VD, Darwish OM, Henry MM, Jun IC, Siddiqui SA. Sarcomatoid renal cell carcinoma metastasis to the penis. *Case Rep Urol*. 2015:1–4. ID 467974.