

Oncology

An unusual case of solitary sternal metastasis of renal cell carcinoma

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Introduction

Renal cell carcinoma (RCC) accounts for 85% of all solid renal tumors in adults. Nearly 20–30% of patients with RCC have distant metastasis at presentation, and of these, solitary bone metastasis represents 1.6–3.6 (1). Sternal metastasis of renal cell carcinoma (RCC) has rarely been reported in the literature. We present here a case of solitary bone metastasis to the sternum as an initial presentation of clear-cell renal carcinoma in a 57-year-old man.

Case

A 58-year-old man with past medical history of hypertension and chronic renal insufficiency (hemodialysis, 3 times a week) presented pain overlying the sternum. Clinical examination showed a tender indurated mass of midsternal location measuring 6 cm × 5 cm. Computed tomography (CT) scan demonstrated a lesion of 6 × 4 × 2 cm in the manubrium invading adjacent soft tissue without metastasis in the lung or the mediastinum (Fig. 1A). Because of the possibility that sternal mass was a metastasis, a search for a primary tumor was undertaken with abdominal ultrasonography. Sonography showed an exophytic left-sided renal mass measuring about 9 cm in diameter. The CT scan revealed a heterogeneous and avidly enhancing mass in the same location, with hypodense central areas indicative of necrosis without evidence of venous thrombus or lymphadenopathy (Fig. 1B). Bone scan found no other bone invasion except in the manubrium (Fig. 2). Open biopsy of the sternal mass was performed and pathology revealed

metastatic renal cell carcinoma. The diagnosis of solitary sternal metastasis of renal carcinoma was made. Surgical treatment for renal tumor and metastasis was indicated by oncologic multidisciplinary team. First a radical left nephrectomy was performed. The histopathologic diagnosis was renal clear cell carcinoma (Fuhrman nuclear grade 2) (Fig. 3A and B). Postoperative course was uneventful. Sternectomy with resection of 1,2 and 3rd costal cartilage through median sternotomy skin incision was done. By using Prolene mesh shaped and contoured to fill the sternal void and the sternum was thus reconstructed with good fixation. A bilateral pectoralis advancement flap was then used to close the defect. The patient's recovery was complicated by a surgical site infection and bilateral massive pulmonary embolisms. Despite intensive reanimation, patient was dead.

Discussion

Renal cell carcinoma (RCC) accounts for approximately 3% of adult malignancies, with about 1 of 4 presenting with metastases.¹ The most common sites of metastasis in RCC are the lung (75% of cases), lymph nodes (36%), bones (20%), liver (18%), skin (8%), and brain (8%). Solitary metastases occur in less than 5% of cases of metastasized disease.¹ Solitary metastasis of renal cell carcinoma in sternum is extremely rare. Complete resection of solitary metastases from renal cell carcinoma is justified and can contribute to a long-term survival.¹ In addition, sternal metastases are different from other bony metastases, such as vertebral metastases, in that their lack of an expansive communicative vasculature, like those provided by the paravertebral

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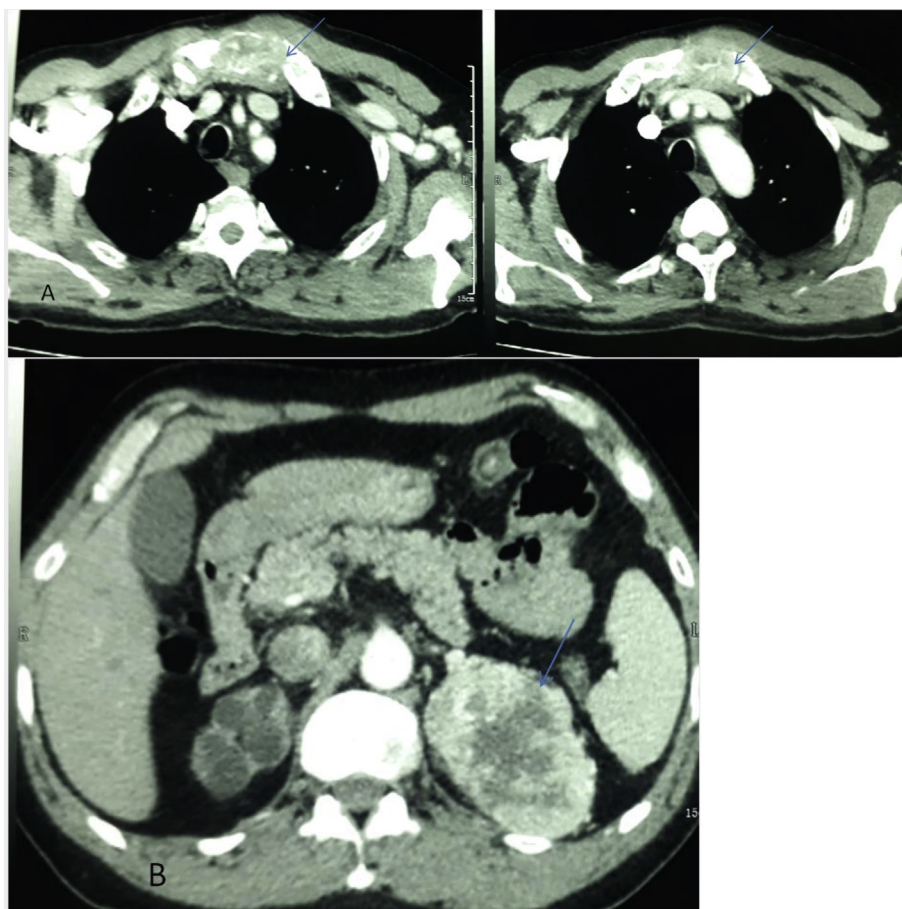


Fig. 1. A: Contrast enhanced CT scan in the axial plane showing a lesion of 6 × 4 × 2cm in the manubrium invading adjacent soft tissue.
B. Contrast enhanced CT scan in the axial plane showing heterogeneous and avidly enhancing mass in the left kidney, with hypodense central areas indicative of necrosis.

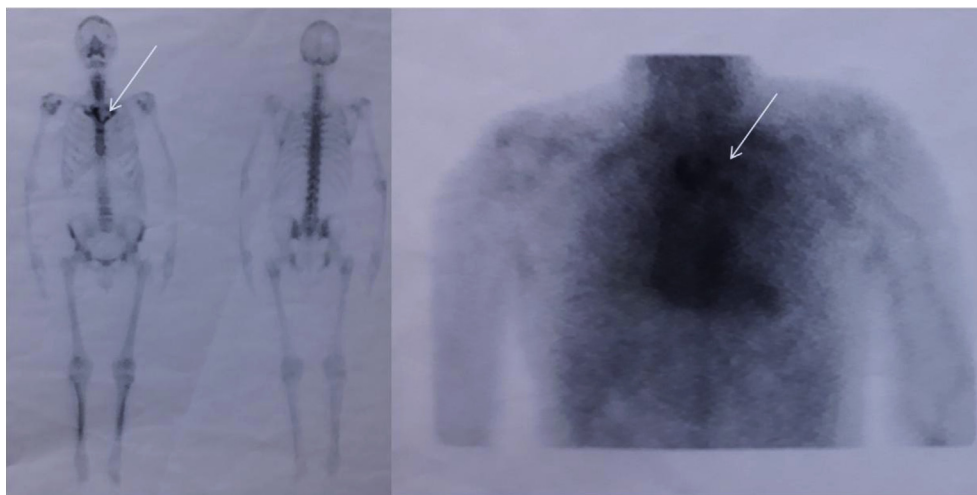


Fig. 2. Bone scan showing a solitary bone invasion in the manubrium.

venous plexus and other venous systems, means they might remain solitary for an extended time.² Although no prospective studies have been reported, a retrospective analysis of 278 patients with metastatic RCC found the highest survival among those patients who underwent curative metastasectomy (5-year survival of 44%).³ A similar result was reported for survival rate of 60 patients with solitary bony metastasis from renal cell carcinoma. Patients who had a surgical procedure had better survival rates compared with patients who had adjuvant

treatment modalities 36% versus 8%, at 5 years.⁴ The results of a systematic review suggest a survival benefit with complete metastasectomy versus either incomplete or no metastasectomy for renal cell carcinoma. There was also some evidence in favor of local treatment in terms of symptom control, such as pain relief in patients with bone metastases.⁵

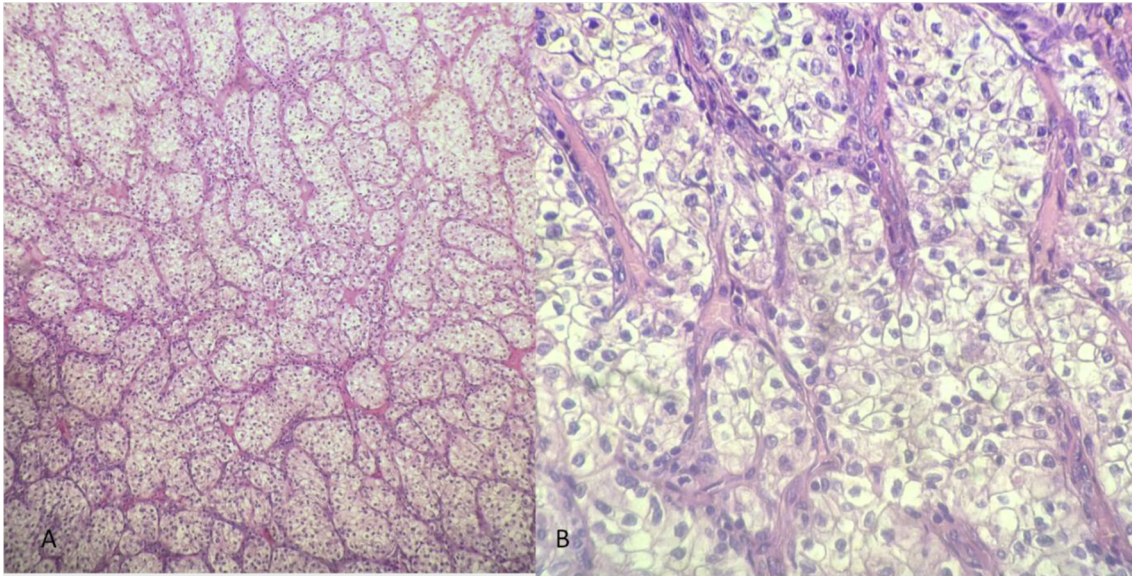


Fig. 3. A: Histological examination showing Carcinoma composed of sheets and alveolar structures, separated by an abundance of thin-walled blood vessels. (Hematoxylin-Eosin, x 10).

B. Histological examination showing Tumor cells with distinct cell membranes and clear cytoplasm. Nuclei are round and uniform; nucleoli visible (Hematoxylin-Eosin, x 40).

Conclusion

Despite technological advances for early identification of RCC, about 25–30% of patients have metastases at presentation. The prognosis of these patients is poor, especially due to the lack of effectiveness of radiation and chemotherapy. Solitary sternal metastasis of renal tumor is rare. Radical nephrectomy associated with metastatic bone tumor resection was made to improve functional status and survival.

Conflicts of interest

None declared.

References

1. Thyaviahally Yuvaraja B, et al. Management of renal cell carcinoma with solitary metastasis World. *J Surg Oncol.* 2005;3:48. <https://doi.org/10.1186/1477-7819-3-48>.
2. Noguchi S, Miyauchi K, Nishizawa Y, Imaoka S, Koyama H, Iwanaga T. Results of surgical treatment for sternal metastasis of breast cancer. *Cancer.* 1988;62:1397–1401.
3. Kavolius JP, Mastorakos DP, Pavlovich C, Russo P, Burt ME, Brady MS. Resection of metastatic renal cell carcinoma. *J Clin Oncol.* 1998;16:2261–2266.
4. Fuchs B, Trousdale RT, Rock MG. Solitary bony metastasis from renal cell carcinoma: significance of surgical treatment. *Clin Orthop Relat Res.* 2005;431:187–192. <https://doi.org/10.1097/01.blo.0000149820.65137.b4>.
5. Dabestani S, et al. Local treatments for metastases of renal cell carcinoma: a systematic review. *Lancet Oncol.* 2014 Nov;15(12) [https://doi.org/10.1016/S1470-2045\(14\)70235-9](https://doi.org/10.1016/S1470-2045(14)70235-9).