Title: Renal Cell Carcinoma with Metastasis to the Right Atrium

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Introduction:

Renal Cell Carcinoma (RCC) is an aggressive tumor with metastasis occurring in 1/3 of the cases at the time of diagnosis. Metastasis commonly involves the inferior vena cava, lungs, liver, bones, and brain. However, cardiac metastasis is rare, with right atrial involvement accounting for less than 1% of cases.

Case Presentation:

A 66-year-old male with a past medical history significant for tobacco use presented to ED with right lower extremity (RLE) edema and heaviness for four days. The patient denied fever, shortness of breath, recent prolonged inactivity and surgeries, or travel history. Vital signs were notable for BP 158/94. Physical examination was significant for right lower limb tenderness and 4+ nonpitting RLE edema. Venous duplex revealed an extensive occlusive thrombus in the right common femoral vein, extending into the external iliac vein and inferior vena cava. The patient was admitted and started on a heparin drip. He underwent thrombectomy, and intra-operative findings were notable for extensive bilateral lower extremity thrombus with extension into the inferior vena cava to the diaphragm level. Pathologic evaluation of thrombus revealed embolized carcinoma with high-grade rhabdoid features. The tissue tested positive for Renal Cell Carcinoma. The tumor immunohistochemically was positive for PAX-8, focal CAIX, PanKeratin, focal renal cell carcinoma antigen, and AMACR (p504S), suggestive of a renal origin. Transthoracic echocardiogram showed a large mass protruding in the right atrium, and contrast uptake was consistent with RCC rather than thrombus. The diagnosis of Stage IV RCC, rhabdoid variant, was confirmed. He underwent an open left nephrectomy and sternotomy with the removal of the right atrial thrombus. The patient was discharged home and followed up with oncology as outpatient. He was started on chemotherapy with Pembrolizumab and Axitinib. Repeat imaging performed 1.5 years from diagnosis shows no evidence of RCC.

Discussion:

The classic triad presentation for RCC consists of hematuria, flank pain, and palpable abdominal mass. RCC is generally noted as an incidental finding in imaging studies. Cigarette smoking, obesity, hypertension, family history, workplace exposure, and male gender are known risk factors. CT with contrast is needed for optimal staging, and MRI is helpful when vasculature involvement is suspected. Treatment with Pembrolizumab plus Axitinib for people with previously untreated advanced RCC resulted in significantly longer overall survival and progression-free survival.

Conclusion:

We present a case of RCC with metastasis to the right atrium. Despite the recent advancement in surgical and medical treatment, which have resulted in improved mortality rates; however, metastatic RCC remains incurable.