Oncology

Left renal mass with venous extension in hemi-azygous vein

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ABSTRACT

Extension of renal mass (RM) along venous drainage pathways is a well-recognized entity. All previously reported cases of RM show inferior vena cava (IVC), left renal vein and azygous vein involvement. We report a 55-year-old man who had left RM arising from the upper pole with invasion in left renal vein, IVC and hemi-azygous vein. To our knowledge, we report the first case of RM with venous extension in hemi-azygous vein.

Introduction

Most renal masses are renal cell carcinoma diagnosed incidentally. A renal mass presents with the signs and symptoms of blood in the urine, pain and pressure or mass in the side or back, swelling of the ankles and legs, high blood pressure, anaemia, fatigue and loss of appetite. Renal cell carcinoma (RCC) represents roughly 3% of cancers worldwide.1 In 4–10% of patients, RCC forms a venous tumour thrombus (VTT) and invades the inferior vena cava (IVC). Although renal cell carcinoma is well known to invade into the renal vein and inferior vena cava, its association with hemi-azygous vein is extremely rare with almost no case reports in the literature.

In the current case report, we describe our experience in a patient with renal cell mass invading the IVC, left renal vein and hemi-azygous veins with a lytic lesion in first thoracic vertebrae and sub centimetre pulmonary nodules.

Case report

A 55 years old gentleman presents in urology outpatient department with complaint of on and off episodes of hematuria for the last one month. Hematuria settled temporarily by using broad-spectrum oral antibiotics prescribed by the general practitioner. He is hypertensive and non-smoker. He denied using any antiplatelet medications, no history of trauma and previous surgery. At the time of presentation, his hematuria was settled.

The hematological profile shows Hemoglobin 9.1g/dl, white cell count 6.3*10³/μL, platelet 245*10³/μL, serum creatinine 2.21 mg/dl, urinalysis shows the presence of 8-10/HPF red cells and normal clotting profile. His ultrasound KUB shows the echo mixed focal lesion in left kidney measuring 11.2*9.9 cm with internal vascularity seen at upper pole, left renal cyst 8.9*7.3 cm at the lower pole and IVC thrombus. Echocardiography shows normal sized cardiac chambers and normal systolic & diastolic functions with mild pulmonary hypertension.

Due to raised serum creatinine, contrast-enhanced computed tomography (CECT) was not possible so magnetic resonance imaging (MRI) abdomen and pelvis were advised as per our hospital protocol. MRI abdomen and pelvis show a large heterogeneously signal intensity mass lesion measuring 9.9*11.8*11cm (AP*T*CC dimension) in the upper pole of left kidney with invasion into the left renal vein and inferior vena cava, its association with hemi-azygous vein is extremely rare with almost no case reports in the literature.

In the current case report, we describe our experience in a patient with renal cell mass invading the IVC, left renal vein and hemi-azygous veins with a lytic lesion in first thoracic vertebrae and sub centimetre pulmonary nodules.

HRCT chest shows intrapulmonary soft tissue nodules in pre-carinal and sub-carinal region's largest measuring 9.1 mm in short axis in the subaortic region. A lytic lesion in T1 body on the right side, likely metastatic deposit.

The case was discussed in the multidisciplinary team meeting. Since the disease has already metastasized to first thoracic vertebrae it was decided to perform an ultrasound-guided biopsy of the lesion and bone scan followed by targeted therapy. Due to the unexplained raised serum creatinine, DTPA scan should be carried out to see the functional status of both kidneys.

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Discussion

A number of articles and case reports are available for the venous extension of renal masses but none has reported the extension in hemi-azygous vein.

Deep collateral venous drainage of the kidneys includes adrenal, gonadal, ureteral, inferior phrenic, second and third lumbar, capsular, and ascending lumbar veins. Although all seven are generally available to the left kidney, only the capsular and ureteral veins are commonly present on the right. The ascending lumbar veins, which represent the primary deep collaterals to the IVC, originate from the common iliac veins and receive venous flow from the vascular system supplying the lumbar vertebrae, axial musculature, and central nervous system. These veins form the azygous and hemi-azygous systems distally.3

An important difference between the right and left ascending lumbar veins is the presence of a left renal vein branch to the left ascending lumbar, with no such pathway on the right. Acute obstruction or ligation of the IVC will not prevent the normal function of the left kidney; however, the right kidney, with no access to the right ascending lumbar vein and only small capsular and ureteral veins, cannot function normally.3

The mechanisms involved in metastasis are the direct venous spread of disease or direct invasion from surrounding lymph nodes which harbored metastatic disease from renal cell carcinoma. The prognosis at this advanced stage of the disease is dismal with limited treatment options.4

Treatments for metastatic renal cell cancer (RCC) include Immunotherapy, targeted therapy, radiation therapy and chemotherapy. Immunotherapy includes interleukin-2, interferon alpha and checkpoint inhibitors. They either slow the tumour growth or shrinks the cancer cells and activates the immune system through the production of cytokines, which help destroy tumour cells. Targeted therapies for advanced renal cell cancer include anti-angiogenesis therapy. Bevacizumab (Avastin) is used intravenously once in two weeks, which blocks a protein called VEGF, thus preventing the growth of new blood vessels in the tumour. Tyrosine kinase inhibitors (TKIs) target proteins called tyrosine kinases that help cancer cells and their blood vessels grow while the mTOR inhibitors target the mTOR protein, which helps cancer cells grow. Radiation and chemotherapy don’t work very well in metastatic RCC, it can only relieve symptoms like pain or swelling.

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Muhammad Nawaz. Assistant professor, Armed Forces Institute of Urology (AFIU), Rawalpindi Pakistan.

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