Bilateral Synchronous Renal Cell Carcinoma With Inferior Vena Cava Thrombus WithVon Hippel- Lindau Disease.

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Citation

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Abstract

Von Hippel Lindau (VHL) disease is known to be associated to be bilateral renal cell carcinoma (RCC) and death before the age of 40 if untreated. VHL associated with renal cell carcinoma and Inferior Vena-caval (IVC) thrombus is uncommon with only few cases reported in the literature so far. We report a 37 year old male who presented with gross hematuria and was subsequently found to have bilateral renal cell carcinoma with level 2 IVC thrombus necessitating IVC thrombectomy and bilateral synchronous nephrectomy needing long term hemo-dialysis. The patient had good post-operative outcome and was positive for VHL gene. Patient was well on hemo-dialysis and no evidence of metastatic recurrence after one year of follow-up and is awaiting kidney transplant. Patients with bilateral synchronous RCC with IVC thrombus with good performance status and absence of metastatic disease should be treated aggressively.

INTRODUCTION

Renal cell carcinoma (RCC) constitutes 3% of all solid neoplasms seen in humans.¹ Bilateral RCC accounts to 3% of which 48% are synchronous.² Up to 10% of patients with newly diagnosed RCC are diagnosed with renal vein and inferior vena cava (IVC) involvement.³ Of all renal cancer 4% of RCC are thought to be of autosomal dominant hereditary cancer syndromes of which VHL was the first to be described.⁴ VHL is associated with RCC in 25-40% of the patients.⁵ The surgical management of RCC with extension into the renal vein, IVC, or extension into the heart is technically challenging and can provide considerable palliation to the patient and higher long-term survival rates.⁶ Few case reports of RCC with IVC thrombus in VHL were described in the past.⁷ We report a rare case of Bilateral Renal cell carcinoma with Inferior vena cava thrombus (IVC) with positive von Hippel Lindau (VHL) gene where bilateral radical nephrectomy with IVC thrombectomy was done.

CASE HISTORY

A 37 year old man presented with hematuria and clot retention to the emergency department. On physical examination was significant for distended bladder and a mobile mass palpable in the right lumbar region. Ultrasound revealed multiple bilateral complex cortical cysts of varying sizes and right kidney showed an irregular mixed echoic 8.6 cm x 6.7 cm solid lesion in the lower pole. Further evaluation with contrast-enhanced abdominal computed tomography (CECT) revealed Right kidney showing a well defined heterogeneous soft tissue density measuring 8.9 cm x 8.3 cm with tumour extension into IVC through the right renal vein (lesion measuring 8 cm x 5 cm) and Left kidney with a well defined heterogeneously enhancing lesion measuring 4 cm x 4.2 cm with multiple bilateral Bosnaik's Type 3 renal cortical cysts (Fig1).

Figure 1

Fig 1: CECT abdomen showing bilateral renal tumours with tumour thrombus in IVC (Axial and sagittal view) and Bosniak's Type 3 cysts.



Computed tomography of chest & Magnetic resonance imaging of brain were unremarkable. Preoperatively, hemodialysis jugular catheter was placed in plan for postoperative renal replacement therapy. Patient underwent bilateral radical nephrectomy and IVC thrombectomy after complete mobilisation of liver (Fig 2).

Figure 2

Fig 2: Gross specimen of Right kidney with tumour thrombus and Left kidney (Cut section) showing hilar tumour with simple cortical cysts.



Histopathology revealed lesion comprised of clear cells arranged mainly in tubular with vesicular nuclei suggestive of multi-centric clear cell renal cell carcinoma with multiple bilateral simple renal cysts. The patient had good postoperative recovery is on maintenance hemo-dialysis. Patient on follow-up at one year had no evidence of local recurrence and metastases. Our future plan for the patient is a probable renal transplantation at the end of two years if there is no local recurrence and metastases.

DISCUSSION

Hereditary renal cancers account for 3-5% of all renal cancers.⁴ Von Hippel-Lindau (VHL) disease is the most common type of HRC syndrome.⁴ Of patients with VHL, renal cancer is associated with 25-40%.⁸ This is a relatively rare autosomal dominant disorder that occurs with a frequency of 1 per 36,000 populations. VHL tumour suppressor gene, which is located at chromosome 3p25-26, has a role for both the sporadic and the familial forms of clear cell RCC. RCC in VHL is distinctive for its early age at onset, often in the third, fourth, or fifth decade of life, and for its bilateral and multifocal involvement.9 Before modern screening tests were established, many patients with VHL died before reaching 50 years of age, mostly due to complications of CNS hemangioblastoma or RCC.^{9, 10} RCC in VHL is clear cell variant associated with a less aggressive course, slower growth, a lower rate of metastasis, and most importantly, improved cancer-specific survival.¹¹

This patient was asymptomatic till the onset of the sudden

onset of hematuria and clot retention which is typical for patients with unscreened population for VHL or sporadic VHL. The diagnosis of VHL was unsuspected till CECT diagnosis of bilateral RCC. Screening was done preoperatively to rule out associated lesions and to corroborate the diagnosis but was not of much help and only the genetic analysis was conclusive. The incidence of IVC thrombus is rare in VHL with RCC probably due to less aggressiveness of the tumour and rigid surveillance for the onset of new tumours. Few cases have been reported in literature so far.⁷ Prior to the era of screening most of VHL patients succumbed to metastatic disease and were subject to bilateral nephrectomy and renal transplantation eliminating the risk of tumours in unaffected renal tissue¹² which was done in the present patient. With the advent of screening and nephron sparing surgery (NSS) the need for renal replacement therapy (RRT) following intervention for VHL decreased significantly.¹³ In a multicenter study where the patients were managed with NSS, 2% of patient required long term RRT.¹³ The reason the present patient was not taken up for NSS on the left kidney was presence of Multiple type III cyst, the tumour size of 4cm (associated with higher metastatic potential), poor compliance for stringent follow up, the hilar location of tumour and uncertainty of additional tumours on the standard imaging. Though RRT is not an ideal option in patients in the era of NSS the advanced presentation of the disease mandated the need for bilateral nephrectomy and RRT. The patient is on follow up with no evidence of disease at the end of one year in plan for renal transplantation at end of 2 year metastasis free period. A large series from Cleveland clinic concluded that renal transplantation was an effective form of RRT for VHL patients with limited risk of cancer recurrence.¹⁴

VHL should be suspected in all patients presenting with Bilateral Renal cell carcinoma and multiple renal cysts. NSS is the gold standard of treatment if the lesions are detected early. Bilateral nephrectomy with RRT should be the last option for these patients. IVC thrombectomy offers long term palliation and survival benefit.

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