Research Paper

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Unusual Presentation of Renal Cell Carcinoma with Right Atrial Thrombus Impinging on Tricuspid Valve Leading to Tricuspid Stenosis- A Case Report

Medical Sciences

KEYWORDS : Beating heart, Functional Tricuspid stenosis, Renal cell carcinoma, Right atrial thrombus.

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ABSTRACT

We present an unusual case of renal cell carcinoma (RCC), presented with shortness of breath, pedal edema, decreased appetite, generalized weakness and occasional chest pain. Investigations done, keeping in mind the cardiac symptoms but was found to have Renal cell carcinoma with a large thrombus extending from inferior vena cava (IVC) to right atrium and impinging on tricuspid valve leading to functional tricuspid stenosis The tumor and the thrombus was treated in single stage with the help of cardiopulmonary bypass under mild hypothermia, on beating heart.

INTRODUCTION

Renal cell carcinoma(RCC) can present with symptoms other than the classical symptoms and sign of hematuria, flank pain and palpable mass which has now become more of exception rather than a rule. RCC with extension into right atrium (RA) is a rare occurrence with incidence of less than 1%[1]. A large RA thrombus can impinge on tricuspid valve causing functional tricuspid stenosis. This can be treated in single stage with the help of cardiopulmonary bypass (CPB) under mild hypothermia, on beating heart. . The use of mild hypothermic cardiopulmonary bypass without cross clamping and cardioplegic arrest is already reported in few literature4. If there is no local infiltration or distant metastasis, the prognosis is not adversely affected provided complete resection is done[2,3].

Case report

A 68years old gentleman presented to us with history of shortness of breath, bilateral pedal edema, decreased appetite, generalized weakness and occasional chest pain. He also complained of 8 to 10 kg weight loss. On physical examination, pallor, bilateral pedal edema with distended neck veins was present. On auscultation S1 and S2 was normal, and a mid-diastolic murmur, with no change on dynamic auscultation, was present at the left sternal border. On evaluation with transthoracic echocardiography (Fig.1) we found a large (6cmX3cm) smooth mass in the RA, impinging on the tricuspid valve and was extending into the IVC. USG abdomen was done which revealed a hypoechoic lesion of 50mm X 23mm in the lower pole of left kidney and a hypoechoic lesion in left renal vein extending into the IVC. MRI abdomen done suggestive of a nodular mass in the lower pole of left kidney measuring 61mm X 2.9mm X 3.3mm. The entire left renal vein and IVC was almost involved sparing proximal pre-hepatic part and extending to the site of drainage in the RA. No lymph node was involved. There was moderate ascites with bilateral hydrocele.

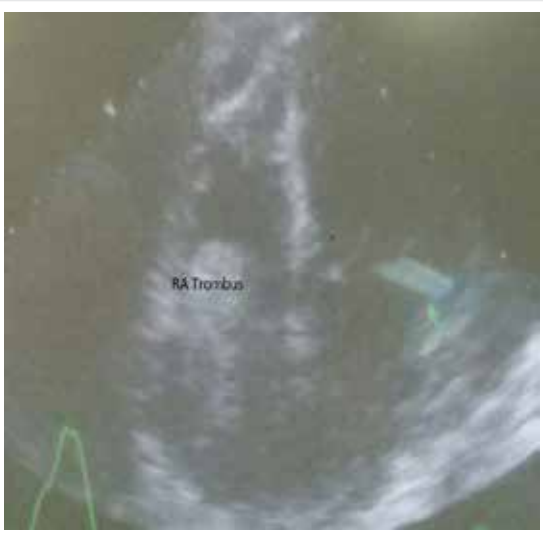

Fig. 1: Transthoracic echocardiography showing a large RA thrombus.

He was then taken up for single stage removal of the left renal mass and the RA thrombus using CPB. The abdomen was opened with chevron Incision. A large mass arising from the lower pole of left kidney was found infiltrating into the Gerota's fascia. The IVC was firm in consistency due to the thrombus within. Left radical nephrectomy was done after ligating left renal artery (Fig.2).

Fig. 2: Hilum is being held with vascular clamp, just before delivering the specimen.

IVC was mobilized with little manipulation and taped with cotton umbilical tape. IVC above the opening of renal veins was exposed and gently cleared of surrounding structures. Left anterolateral thoracotomy done and heart was exposed with great vessels. Aorta and SVC canulated .IVC was canulated just below the opening of the renal veins through abdominal incision. CPB was then established and temperature was brought down to 33^{0}C.Aorta was not cross clamped and no cardioplagia was given. Pump flow rate was 2.6 lt /m^2/mint. RA was opened and the thrombus was held with a sponge holding forceps (Fig.3). A gentle traction was given to reach upto its lower part into the IVC and the thrombus was delivered with gentle traction. Then index finger is put inside the IVC to push the rest of the thrombus inside the suprahepaticIVC as far as possible. A 18 Fr Foley's catheter was then introduced in the IVC through RA and the balloon inflated with 40cc of saline to temporarily block the hepatic veins. Cavotomy was performed just above the canulation site and the thrombus was pilled off from the wall of IVC. The thrombus was removed enblock (Fig.4). The Foley's catheter was then deflated to half its volume and pulled through RA. By this maneuver the left over pieces of thrombus was taken out of IVC. The same Foley's catheter was then put through IVCcavotomy site into the RA and the same maneuver was repeated. The left renal vein opening was closed by 5-0 prolene. The IVC and RA incision was closed after washing with normal saline. Patient was weaned off CPB. The total CPB time was 68 minutes. Abdomen was closed and patient was shifted to recovery in stable condition. He was extubated after 6 hrs. He was put on minimum ionotropic support (dopamine) for first 10hrs and gradually stopped. He was discharged after 6 days and is doing well.

Fig. 3: Showing a large RA thrombus impinging on tricuspid valve.

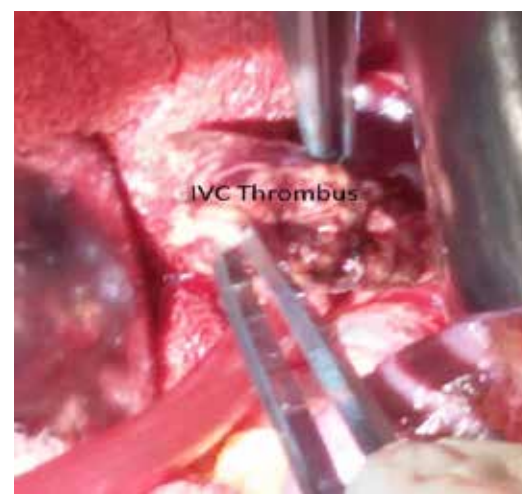

Fig. 4: Thrombus in IVC being removed enblock ensuring no thrombus spillage.

Discussion

Though renal cell carcinoma is a common primary malignant disease of the kidney, the extension of thrombus from IVC to RA is a very rare events[5]. The classical presentation of RCC with painless hematuria,flank pain and palpable mass is now not commonly seen rather patient can presents with vague cardiac symptoms, if large RA thrombus is present. As in our case the patient presented with exertional dyspnea and murmur of functional tricuspid stenosis. The intra vascular tumor invasion and its extension into RA is not associated with adverse prognosis providedcomplete resection is done with use of CPB. CPB has been recommended, with or without cross clamping and cardiac arrest as it provides better hemodynamic stability and a bloodless field. It also reduces the possibilities of pulmonary embolism and provides good exposure for complete resection of thrombus from IVC and RA[6,7]. However CPB increases the total operative time, cardio-respiratory complication and coagulopathies.

All combination of CPB has been reported for removing RA thrombus such as CPB with deep hypothermia and circulatory arrest, CPB with moderate hypothermia with aorta cross clamping and cardioplegic arrest[8] and CPB without cross clamping and cardiac arrest as we have done.

The use of CPB with moderate hypothermia and without cross clamping and cardioplegic arrest can be safely performed for re-

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moval of RA thrombus with acceptable complication rate[4].

Conclusion:

Any elderly patient presenting with vague cardiac symptoms with loss of appetite and weight loss must be extensively evaluated to rule out any cardiac or extra cardiac malignancies. RCC with large RA thrombus can be managed by single stage procedure using CPB. The associated functional tricuspid valve stenosis will be corrected itself after the thrombus is removed. We have to be extremely careful while handling the thrombus to prevent embolization.

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