Letter to Editor

DOI: 10.7860/IJARS/2016/16501:2102

Anaesthesion Section

Role of Epiaortic Ultrasound Probe Intraoperatively to Give Clamp over Inferior Vena Cava while Removing Renal Cell Carcinoma from IVC along with Nephrectomy

VIPIN KUMAR SINGH, SANDEEP SAHU, RAJEEV RATAN

Keywords: Intraoperative USG probe, IVC extension, Radical nephrectomy

Sir,

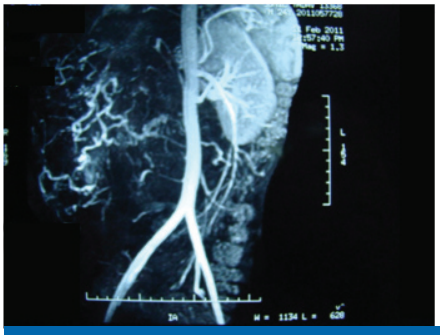
Renal cell carcinoma has got some unique features like its intracaval extension as a tumor thrombus without involvement of vena cava wall in majority of cases [1,2].

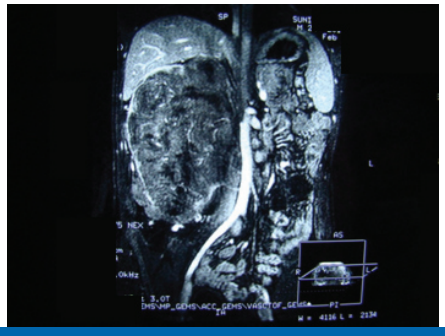
Extension in vena cava is seen in 4-10% of cases [3,4]. Radical nephrectomy along with vena caval thrombectomy is the only treatment strategy for those patients who do not have metastasis [5,6].

The distal end of the tumor thrombus in the inferior vena cava (IVC) is the basis of classification for the level of thrombus. The level I thrombus is defined as when the distal end of thrombus extend below the liver (infra hepatic), level II thrombus are those lying behind the liver (retro-hepatic) and level III thrombus are supra diaphragmatic with or without extension to the right atrium [7]. It is essential to know the cephalad extension of the tumor thrombus in the IVC because the surgical techniques for thrombectomy are decided by the distal end of thrombus and it will affect the immediate surgical outcome also [7,8]. By means of CT scan or MRI and color doppler ultrasound we can determine the distal end of tumor thrombus as well as patency of the hepatic veins. But intraoperatively due to manipulation of renal tumor and adhesiolysis, extension of tumor in vena cava could be changed. At this point of time, clamp over vena cava without knowing the present status of extension might be disastrous due to embolisation of some part of tumor to heart.

To know the extension of tumor intraoperatively, we used epiaortic ultrasound probe (5to12 MHz) over vena cava, after that clamp applied. This approach might be beneficial in case of level I and level II tumor thrombus to avoid tumor embolisation.

A case of 23 yrs old male presented to Urology Department with chief complaint of haematuria with passage of clots for last 2 months, pain in right flank region for 2 months and fever off and on for 2 months. On inspection, there was diffuse abdominal swelling involving right hypochondrium, epigastrium and right lumbar region. On palpation, a 25×25 cm non tender, globular, firm mass detected. Investigations showing haemoglobin 7.6 g/dl, total leucocyte count 7700/mm^3, platelet count 2.15×105/mm^3. Serum sodium 141





[Table/Fig-1]: MRI showing right side of kidney replaced by RCC **[Table/Fig-2]:** MRI (coronal section) showing right sided RCC with extension in IVC. **[Table/Fig-3]:** Right sided nephrectomy along with IVC portion of tumor extension.

mEq/L, serum potassium 5.0mEq/L and serum creatinine 0.7 mg/dl.

On MRI report, right kidney was totally replaced by a well defined heterogeneously enhancing large mass with invasion of perirenal fascia noted [Table/Fig-1]. Right renal vein was thrombosed with thrombus seen extending upto the infrahepatic portion and retro- hepatic portion of IVC (approximately 3.2 cm below the hepatic vein in confluence draining into IVC). The IVC was focally expanded in the renal segment and non enhancing hypointense thrombus was seen filling the IVC for 6.3 cm with a thin rim of peripheral contrast [Table/Fig-2]. Multiple small retroperitoneal lymph nodes were observed. He is diagnosed a case of renal cell carcinoma with level II tumor thrombus.

After anesthetizing the patient, we put central line and arterial line for beat to beat hemodynamic monitoring.

After proper painting and draping, Chevron incision was made over abdomen. Adhesiolysis around the tumor was done, after mobilization of intestine. Renal artery and vein ligated and kidney removed with minimal disturbance of IVC [Table/Fig-3]. To know the exact extension of tumor in IVC, intraoperatively we used epiaortic ultrasound probe (5 to 12 MHz) over vena cava. Upper extension of tumor in IVC is seen and we applied clamp there. Then inferior vena cava opened and thrombus removed *in toto* with excision of IVC wall at points of invasion with tissue margin then repaired again with prolene. During intraoperative period, hemodynamics was stable. After surgery, extubation was done. In the postoperative recovery room , patient was hemodynamically stable. We observed him intensively for next 24 hrs.

In this way, by using epiaortic ultrasound probe intraoperatively we can assure extension of tumor inside IVC and then clamping site accordingly. Otherwise tumor embolisation could lead to increase in morbidity and mortality of renal cell carcinoma patients.

REFERENCES

[1] Sateesh CB, Tim M. Shah PM, Goyal A, Choudhary M, Eshghi M et al. Malignant renal tumors with extension to the inferior vena cava. *The Am J Surg*.1998; 176: 137-39.

[2] Skinner DG, Pritchett TR, Lieskovsky G et al. Vena cava involve¬ment by renal cell carcinoma: surgical resection provides mean¬ingful long-term survival. *Ann Surg*.1989; 210: 387-94.

[3] Neves RJ, Zinck H. Surgical treatment of renal cancer with vena cava extension. *Br J Urol*. 1987; 59: 390-95.

[4] O'Donohue MK, Flanagan F, Fitzpatrick JM. Smith JM. Surgical approach to inferior vena cava extension of renal carcinoma. *Br J Urol*.1987; 60: 492-96.

[5] Glazer A and Novick AC. Preoperative transesophageal echocardiography for assessment of vena caval tumor thrombi. a comparative study with venacavography and mag¬netic resonence imaging. *Urology*. 1997; 49: 32-34.

[6] Sosa ER, Muecke EC, Vaughan DE Jr, McCarron Jp Jr. Renal cell carcinoma extending into inferior vena cava:the prognostic signifi¬cance of the level of vena caval involvement. *J Urol*.1984; 132: 1097-100.

[7] Myneni L, Hricak H. Carrol PR. Magnetic resonance imaging of renal carcinoma with extension into the vena cava: staging accuracy and recent advances. *Br J Urol*.1991; 68: 571-78.

[8] Hubsch P, Schurawitzke H, Susani M *et al*. Color Doppler Imaging of the inferior vena cava: indentification of tumor thrombus. *J Ultrasound Med*. 1992; 11: 639-45

AUTHOR(S):

1. Dr. Vipin Kumar Singh
2. Dr. Sandeep Sahu
3. Dr. Rajeev Ratan

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Anaesthesia and Critical Care, KGMU, Lucknow (UP), India.
2. Associate Professor, Department of Anaesthesia and Critical Care, SGPGIMS, Lucknow (UP), India.
3. Assistant Professor, Department of Anaesthesia and Critical Care, RMLIMS, Lucknow (UP), India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Vipin Kumar Singh,
Department of Anaesthesiology and Critical Care,
KGMU, Lucknow-226003, UP, India.
E-mail: vipintheazad@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS:

None.

Date of Publishing: **Jan 05, 2016**