A rare case of vena cava leiomyoma: A case report

Gabriel H Sánchez, Mauricio Abello1, Enrique J Osorio1, Juan F Muriel1
El Bosque University/Shaio Clinic, Cardiac Anesthesia Fellow, 1Cardiovascular Anesthesia, Shaio Clinic, Bogotá, Colombia

ABSTRACT

Intravascular leiomyoma is an uncommon disease and depending of vascular involvement and anesthetic challenge. We review a case of a 53-year-old woman who underwent vena cava leiomyoma resection under cardipulmonary bypass using deep hypothermic circulatory arrest (DHCA). Invasive hemodynamic and neurologic monitoring, transesophageal echocardiography, and viscoelastic coagulation test were used during the procedure. Total surgical resection was accomplished with no complications and the patient was extubated 2 days after surgery without cardiac or neurologic deficit. Although uncommon, level IV intravascular leiomyoma surgery is a challenge because the total resection needs DHCA, prolonged cardipulmonary bypass and aortic cross-clamp times. These conditions expose the patient to the risk of coagulopathy, low cardiac output syndrome, and neurologic deficit.

Keywords: Deep hypothermic circulatory arrest, intravascular leiomyoma, Mayo classification

INTRODUCTION

Tumors with vena cava invasion present a challenge to the anesthesiologist. Renal cell carcinoma is commonest of this kind of tumors. In a different way, leiomyomatosis is a benign tumor that grows in venous and lymphatics systems. It arises from uterine leiomyomas or uterine venous walls[1]. Tumor commonly enters lumen of iliac vein and grows into inferior vena cava. There are about 34 cases reported, in women with a mean age of 47 years, with a history of uterine leiomyoma.[2]

CASE HISTORY

A 53-year-old female with vena cava tumor presented for tumor resection. Her medical history included a hysterectomy. Preoperative echocardiogram demonstrated a mass in inferior vena cava, occupying 90% of its diameter, that extended to right atrium, occupying 90% of its area [Figure 1]. Left and right ventricle function was normal. CT scan demonstrated an extraperitoneal pelvic mass that invaded inferior vena cava and extended to right atrium [Figure 2].

She underwent tumor resection under general anesthesia and was operated through median sternotomy and laparotomy with cardipulmonary bypass (CPB). Tranexamic acid was used in a low dose scheme, according to Horrow et al.[3] To achieve good exposure, deep hypothermic circulatory arrest (DHCA) was given for 20 min. Temperature throughout DHCA was maintained at 20°C and crossclamp time was 44 min. During DHCA, methylprednisolone 30 mg/kg, propofol 2 mg/kg, phentoin 15 mg/kg, ketamine 1 mg/kg, lidocaine 1.5 mg/kg, furosemide 20 mg, magnesium sulfate 2 g, and a head cooling blanket was used for brain protection. Near-infrared spectroscopy values did not decrease below basal values during DHCA. The patient was weaned from CPB with inotropic support of milrinone 0.5 mcg/kg/min, noradrenaline 0.4 mcg/kg/
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Intracardiac compromise exists. Determination of tumor extent is very important for the anesthetic planning. The Mayo classification is used for staging vena cava extent of the tumor: Level I: Tumor thrombus is either at the entry of the renal vein or within the inferior vena cava 2 cm from the confluence of the renal vein and the inferior vena cava. Level II: Thrombus extends within the inferior vena cava 2 cm above the confluence of the renal vein and inferior vena cava but still remains below the hepatic veins. Level III: Thrombus involves the intrahepatic inferior vena cava. Level IV: Thrombus extends above the diaphragm or into the right atrium.

Invasive monitoring is mandatory, but the insertion of central venous catheter includes the risk of dislodging tumor thrombus. Pulmonary artery catheter insertion is contraindicated in the presence of right heart mass. Large bore venous access must be placed above the diaphragm because of inferior vena cava occlusion during surgical procedure. Transesophageal echocardiography evaluates right ventricle function, presence of tricuspid regurgitation or obstruction, and is useful for the diagnosis of pulmonary embolism.

At anesthetic induction, the main problem is the possibility of occlusion of venous return or tricuspid valve obstruction. This can be avoided with a careful induction using Ketamine, but if hemodynamic collapse develops,
the immediate initiation of cardiopulmonary bypass and thrombectomy is required.\[9\]

The use of Cardiopulmonary bypass reduces the risk of tumor embolization and is used traditionally with deep hypothermic circulatory arrest. This technique is used for gaining a good visualization of the right atrium and for providing a bloodless surgical field in the abdominal vena cava.\[6\] Unfortunately, it increases bypass, operating time, risk of coagulopathy, bleeding, and neurologic sequelae.\[10\]

Patients with tumors invading vena cava must be aggressively managed with surgical resection. The anesthetic approach must consider the extension of tumor. The use of transesophageal echocardiography is necessary, especially in type III and IV tumors. Multidisciplinary management of these patients will produce positive outcomes for patients.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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