Massive Intrathoracic Solitary Fibrous Tumor of the Right Hemithorax

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ABSTRACT

Solitary fibrous tumors of the pleura (SFTP) are rare mesenchymal tumors that arise from visceral or parietal tissue. Surgical resection of massive SFTP can be complicated by airway collapse, vascular compression/hemodynamic instability, and hemorrhage. Patients with SFTP may also present with metabolic derangements secondary to paraneoplastic processes. We present a case of successful removal of massive right-sided SFTP via clamshell sternotomy and discuss the perioperative considerations for which providers should be familiar.

Keywords: Anesthesia, solitary fibrous tumor, thoracic surgery

INTRODUCTION

Solitary fibrous tumors of the pleura (SFTP) are rare mesenchymal tumors that arise from visceral or parietal tissue and have been reported to grow as large as 6.9 kg.¹ In a review of 60 surgical resections of SFTP, 53 patients underwent thoracotomy, 6 underwent video-assisted thoracoscopy, and 1 required median sternotomy.² To our knowledge, no reports of successful massive SFTP excision via clamshell sternotomy have been published to date.³ We present a case of successful removal of massive right-sided SFTP via clamshell sternotomy and discuss the perioperative considerations for which providers should be familiar.

CASE DESCRIPTION

A 51-year-old woman with biopsy-proven right-sided solitary fibrous tumor of the pleura (SFTP) presented with worsening dyspnea on exertion and hypoglycemia. Chest X-ray revealed complete opacification of the right hemithorax with leftward mediastinal shift [Figure 1a]. Computed tomography (CT) imaging revealed a large heterogeneous mass within the right pleural space causing collapse of the pulmonary vasculature and lung, along with cardiac shift and compression of the superior and inferior vena cava [Figure 1b]. Surgical resection via clamshell sternotomy was planned with exposure of femoral vasculature should the need arise for extracorporeal support. Following titrated anesthetic induction, intubation with a single-lumen endotracheal tube was performed given the complete collapse of the right mainstem bronchus. In addition to standard American Society of Anesthesiologists (ASA) monitors, vascular access was established in the right internal jugular vein, left femoral vein, and left radial and femoral arteries.

How to cite this article: Boswell MR, Smith BB, Wigle D, Rowse PG, Smith MM. Massive intrathoracic solitary fibrous tumor of the right hemithorax. Ann Card Anaesth 2021;24:493-4.
A transesophageal echocardiogram (TEE) probe was placed and revealed normal cardiac function without significant valvular heart disease. A balanced anesthetic was maintained throughout the case. Planned exposure of the right femoral artery and vein was performed prior to clamshell incision should cannulation for extracorporeal support be required. Clamshell exposure revealed focal, dense adhesions between the mass and the right upper lobe [Figure 1c]. Wedge resections of these adhesions resulted in hemorrhage (4,742 mL of estimated blood loss) requiring massive transfusion [2,591 mL red blood cell (RBC) salvage (via cell saver), 3,637 mL packed RBCs, 1,789 mL fresh frozen plasma, 465 mL cryoprecipitate, and 396 mL platelets]. The following shock states required active management during the case: Obstructive (due to compressive pathology of chest mass), hypovolemic (due to surgical hemorrhage), and distributive (due to systemic vasodilation and increased vascular permeability in the setting of perioperative inflammatory response).[4,5] After control of bleeding and appropriate volume resuscitation, the patient remained hypotensive in the setting of a normal cardiac index/function via TEE assessment and required vasoactive infusions. In addition, the patient’s intraoperative management was complicated by profound hypoglycemia (nadir glucose 29 mg/dL) which required ongoing dextrose therapy until mass resection. The case proceeded with successful surgical resection [Figure 1d], and the patient was transported, intubated, and sedated to the intensive care unit. The patient was extubated on postoperative day (POD) 1 and discharged on POD 13 with follow-up CT imaging showing no evidence of residual disease.

**DISCUSSION**

Perioperative management of patients presenting with massive SFTP can be challenging and requires multidisciplinary discussions and planning. Complications such as airway collapse, vascular compression/hemodynamic instability, and hemorrhage may be encountered. Proper planning for emergency resuscitative strategies such as extracorporeal support is essential given the risk of circulatory collapse. Patients with SFTP may also present with metabolic derangements. Refractory hypoglycemia secondary to secretion of insulin-like growth factor-2 in a paraneoplastic process named Doege–Potter syndrome and hypertrophic pulmonary osteoarthriopathy have been described requiring provider familiarity when caring for this complex surgical cohort.[6,7]

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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