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Case Report

Perioperative Anesthetic Management for A Patient with Atrial Myxoma for Non-Cardiac Surgery

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Abstract

Atrial myxomas are primary cardiac tumors that are characterized by embolization, intracardiac obstruction, and constitutional symptoms, which are purposefully or incidentally detected on imaging. These tumors may pose significant challenges in the perioperative management of patients undergoing non-cardiac surgeries. This case report details the comprehensive anesthetic management of a 78-year-old male with a large left atrial myxoma undergoing palliative gastro-jejunal loop bypass for small bowel obstruction caused by a duodenal mass. During surgery, the anesthetic management included hemodynamic stability maintenance with phenylephrine infusion, airway management using a GlideScope due to dental concerns, and neuromuscular blockade reversal with sugammadex. In the postoperative period, the patient was vitally stable and did not require any ionotropic support. The future management plan may focus on oncological treatment based on myxoma resection and long-term cardiac monitoring post-myxoma resection. This case report underscores the importance of a tailored anesthetic strategy and multidisciplinary approach in the management of patients with concurrent pathologies.

Key Words: cancer; histology examination; genetic mutation; innovative drugs; clinical research

Introduction

Cardiac myxomas represent the majority of the primary cardiac tumors characterized by the triad of embolization, constitutional features, and intracardiac obstruction. [1,2] The left atrium constitutes the most common site of cardiac myxomas, however, all cardiac chambers can be affected by this pathology. [2] These benign neoplasms These benign neoplasms usually affect adults between the fourth and seventh decades with majority of the cases being sporadic, however, familial cases may emerge in association with Carney's complex. [3,4] In addition to the clinical features mentioned above, patients with cardiac myxomas may develop cutaneous manifestations, however, cutaneous signs are rare findings. [5] While cardiac myxoma patients may be occasionally asymptomatic, the clinical presentation may include influenza-like clinical features, stroke, cardiac failure, and even death. Despite cardiac myxoma being a benign pathology, the potentially fatal nature of the tumor emphasizes prompt diagnosis and surgical management. [6] While the primary treatment for cardiac myxoma is surgical excision of the tumor, patients diagnosed with this pathology may undergo emergency non-cardiac surgeries with safe and effective anesthesia. [7] This case report discusses the perioperative anesthetic approaches and management of a patient with a large left atrial myxoma, discovered incidentally during the evaluation of gastrointestinal symptoms, who underwent a palliative gastrojejunal loop bypass surgery.

Case Report

A 78-year-old male of 167 cm height and 72 kg weight presented with a medical history of hypertension, which was controlled on amlodipine 5 mg/daily, and diabetes mellitus, which was controlled with gliclazide 30 mg/daily. The patient presented with the complaint of epigastric pain, bilious vomiting, constipation, unintentional weight loss amounting to 30 kg over the past year, and an inability to tolerate oral intake. The patient was referred from another facility with a suspicion of partial bowel obstruction and duodenitis. The patient denied any history of chest pain, syncope, or dyspnea. The 12-lead ECG was normal and did not indicate any significant findings.

On radiological examination, the abdominal computed tomography (CT) scan revealed a heterogeneously enhancing mass at the distal duodenum and proximal jejunum, causing small bowel obstruction. **Figure**

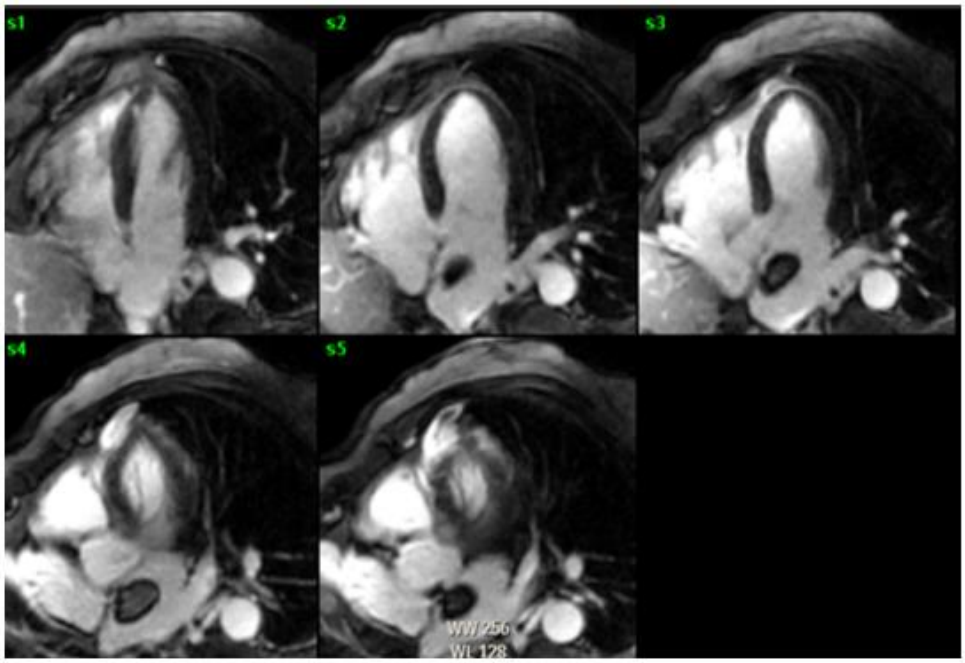

Figure 1: Cardiac MRI showing late gadolinium enhancement of all four chambers, revealing a mass attached to the interatrial septum without fibrosis, which suggests the presence of an atrial myxoma.

incidental finding of a large atrial mass was noted, which was highly suspicious for a thrombus. This was further evaluated with an echocardiography, which demonstrated a large left atrial mass attached to the inter-atrial septum, suspected to be a thrombus or atrial myxoma. Cardiac magnetic resonance imaging ([MRI) confirmed a 2 cm × 3.5 cm atrial mass attached to the septum, with features suggestive of atrial myxoma. Figure

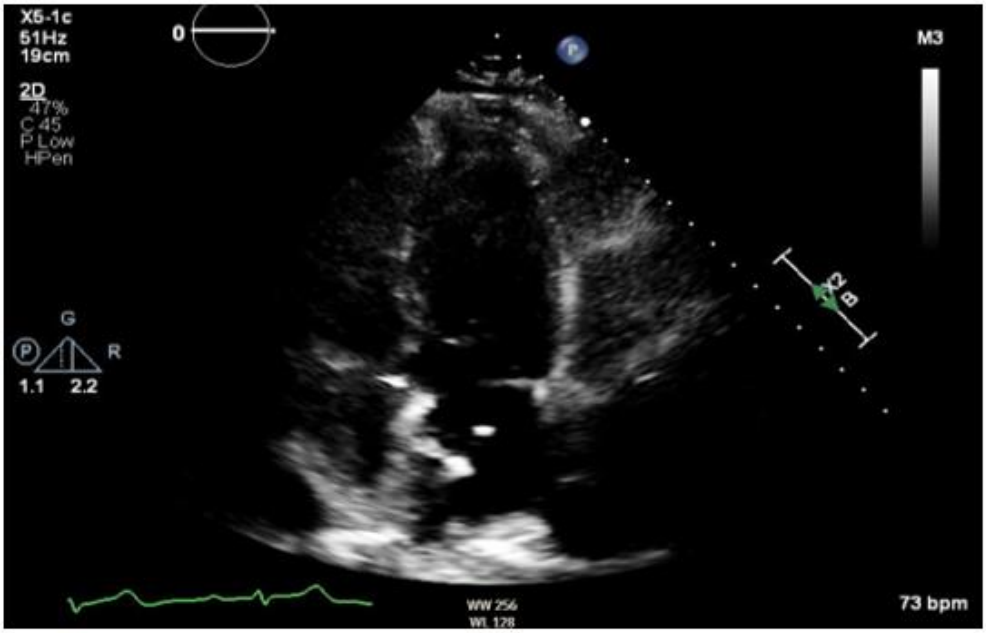

Figure 2: Transthoracic cardiac MRI demonstrating a left atrial mass attached to the interatrial wall, without significant obstruction of the mitral valve. Figure: Cardiac MRI showing late gadolinium enhancement of all four chambers, revealing a mass attached to the interatrial septum without fibrosis, which suggests the presence of an atrial myxoma.

Endoscopic evaluation of the patient comprised a duodenal biopsy, which indicated poorly cohesive carcinoma with signet-ring cells, and a colonoscopy which demonstrated segmental colitis and diverticulitis.

After admitting the patient, a right-sided basilic vein peripherally inserted central catheter [PICC] was placed in order to ensure total parenteral nutrition. Furthermore, the case was discussed in a multidisciplinary meeting whereby surgical resection of the atrial myxoma after managing the bowel obstruction was planned. The management plan also included a diagnostic laparoscopy and a palliative gastrojejunal loop bypass.

At the day of surgery and upon arrival to the operating room, standard ASA monitors were connected and vitals were as; [HR:113, BP:131/71, SpO2:99%]. Awake arterial line was inserted at the left radial artery after local anesthesia was given with 1ml Lidocaine 2%. Prior to the surgical intervention, the patient was pre-oxygenated with 100% FiO2, and 500

mL of albumin 5% was infused. Induction of anesthesia was initiated with fentanyl 200 µg, which was followed by propofol 40 mg and rocuronium 50 mg to facilitate tracheal intubation. A GlideScope was utilized for intubation since the patient had a loose tooth, and his airway was secured using a 7.5 mm endotracheal tube. General anesthesia was maintained using sevoflurane, targeting a minimum alveolar concentration of 1. A phenylephrine infusion at 30-50 mcg/min was used to maintain a mean arterial pressure above 65 mmHg. The arterial blood gases were monitored frequently and remained within normal limits throughout the procedure.

After the procedure, which was based on the above-mentioned management plan, sugammadex 200 mg was administered intravenously to reverse the neuromuscular blockade and the patient was extubated while fully awake and remained vitally stable as he was transferred to the surgical intensive care unit (SICU). The patient was later transferred from SICU to the ward on the first postoperative day for continued care and recovery.

Discussion

Cardiac myxomas are benign neoplasms that constitute approximately 50% of benign cardiac tumors with a female preponderance. Most of the cardiac myxomas arise in the atria, with up to three-fourths of the cases developing in the left atrium. Cardiac myxomas commonly involve the inter-atrial septum. [2,4] The two morphological types of myxomas are papillary and polypoid, which are associated with embolization and obstructive features, respectively. The potential for embolization makes cardiac myxomas functionally malignant tumors. [2] Papillary myxomas are gelatinous and fragile in nature, therefore, fragmentation and embolization of the tumor may involve coronary vasculature, limbs, central nervous system, spleen, and kidneys. In rare instances, the cardiac myxomas may undergo calcification, metaplasia, or develop infections. [2,8]

The majority of the cases of cardiac myxomas are sporadic with only 5% of the cases accounting for familial type associated with Carney's complex. This autosomal dominant disorder is linked to a genetic mutation in the perinatal myosin heavy chain. While the etiological mechanisms are not clearly established, multipotent mesenchymal stem cells are considered to give rise to cardiac myxomas. These cells demonstrate embryonic endothelial-to-mesenchymal transformation and cardiac mesenchymal differentiation markers. [9]

The diagnosis of cardiac myxomas is made using cardiac MRI, CT scan, or echocardiography, with echocardiography being the first-line investigation for cardiac myxomas. [6] Other diagnostic modalities may include genetic and hematological evaluation as well as the assessment of tumor markers including interleukin-6. [10] Transesophageal echocardiography allows better assessment of the size, morphology, site of attachment, and hemodynamic features of the cardiac tumor. A cardiac myxoma appears as a heterogeneous mobile mass with polypoid and papillary forms. [11] The differential diagnoses of cardiac myxomas are other cardiac neoplasms and intracardiac thrombus. [1] Microscopic assessment of the tumor exhibits glandular differentiation with two components. The first corresponds to a typical myxoma with cells in a myxomatous background whereas the second component comprises acini lined by columnar cells that may or may not be pseudostratified. [12]

Given that cardiac myxomas may embolize and lead to hemodynamic instability and even sudden cardiac death, prompt surgical intervention is necessary. Immediate surgical management is also critical to mitigating the risk of neurological complications such as neurological deficits. Notably, the embolization of cardiac myxomas is not determined by the size of the tumor but by its mobility and friability. Surgical management of cardiac myxomas is based on cardiopulmonary bypass, however, some patients may require concomitant surgical repair of the cardiac valves while ensuring the preservation of the valvular structure. After surgical excision of cardiac myxoma, the patients are followed with history, examination, and echocardiography. CT scan and cardiac MRI can also be useful in assessing the recurrence of cardiac myxomas. [13]

A few studies in the literature have discussed the management of cardiac myxomas in patients undergoing non-cardiac surgeries. The non-cardiac surgeries included hand wound debridement, gastrectomy, and proximal femoral nailing in patients with left atrial myxoma. [7,14] It is crucial to administer safe and adequate anesthesia in cardiac myxoma patients undergoing cardiac surgeries as these patients are susceptible to embolic complications in the perioperative period. [14] Consistent with the anesthetic management of the patient in this case report, Ture *et al.* discussed the administration of general anesthesia in a patient with atrial myxoma undergoing hernia repair surgery. [15] Moreover, it is imperative to prioritize the intervention, which is a challenging decision to make. While untreated atrial myxoma is associated with significant mortality, small bowel obstruction may culminate in bowel perforation, ischemia, sepsis, and even death if not managed promptly. [16,17] Considering the potential complications of cardiac myxoma, it is imperative to employ a multidisciplinary team consisting of cardiologists, cardiothoracic surgeons, and anesthetists to ensure proper management of these patients and favorable outcomes, and performing the interventions in a cardiac operation theatre. [14]

Conclusion

This case report has highlighted the diagnostic and management challenges associated with concurrent pathologies in the patient, which included a small bowel obstruction related to a duodenal mass and the incidental diagnosis of atrial myxoma. The employment of a multidisciplinary approach facilitated timely surgical intervention in the patient, optimizing perioperative care and patient outcomes. The findings underscore the importance of vigilant evaluation for incidental findings, such as cardiac masses, during diagnostic work-ups for unrelated symptoms. Lastly, this case report emphasizes the need for continuous monitoring and the potential integration of oncological and cardiological care to address complex, multisystem conditions effectively.

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