



Minimally Invasive Resection of a Giant Right Atrial Myxoma: A Case Report

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What is known on this subject?

Myxomas are common in the left atrium. Myxomas can be excised using minimally invasive methods.

What this case report adds?

In patients with giant myxoma in the right atrium, surgery can be performed safely and effectively with minimally invasive methods instead of conventional median sternotomy, with appropriate localization and dimensions. With this method, hospital and intensive care hospital stays can be reduced and better cosmetic results can be achieved.

ABSTRACT

Heart tumors can be divided into primary and secondary tumors. Secondary tumors are more common than primary tumors. The majority of primary tumors are benign, and the most common type is myxoma. Myxomas are most commonly seen in the left atrium and rarely in the right atrium or ventricles. Surgical excision can be performed with conventional median sternotomy in giant myxomas, whereas minimally invasive methods are preferred in tumors of appropriate size and localization. In this article, we report the successful operation of a giant cardiac myxoma in the right atrium with minimally invasive surgery.

Keywords: Myxoma, giant right atrium tumor, minimally invasive surgery

Introduction

The estimated prevalence of primary heart tumors is 1:2000 at autopsy, with approximately 90% benign (mostly myxoma), whereas secondary tumors are approximately 20 times more common than primary tumors (1). Myxomas are usually seen in the atrial fossa ovalis region, 75% in the left atrium, 10-15% in the right atrium, and rarely in the ventricle or heart valve (2). They are usually asymptomatic and detected by imaging methods performed for other reasons. In symptomatic cases, the triad of embolism, intracardiac obstruction, and structural findings is characteristic.

Case Report

A 40-year-old male patient was admitted with complaints of shortness of breath for six months. His vital signs were stable, his heart rate was normal and rhythmic, no pathological sound or murmur was detected, hepatomegaly and pretibial edema were not observed, and he had no other disease in his history. Transthoracic echocardiography (TTE) revealed an ejection fraction (EF): 55% and a pedicled myxoma of 7 cm in diameter in the interatrial septum of the right atrium. Subsequently, transesophageal echocardiography (TEE) revealed a

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6.3 x 4.8 cm diameter, multilobular, heterogeneous mass that was adhered to the base of the inferior right atrium wall, partially compatible with mobile myxoma, prolapsed into the tricuspid valve and right ventricle in the right atrium, and formed relative tricuspid valve stenosis. In addition, the tricuspid annulus was 42 mm, mild tricuspid valve regurgitation was detected, and no thrombus was detected in the left atrium. No pathology was observed in the coronary arteries on coronary angiography. Surgery was planned for the patient using a minimally invasive method. The right jugular vein, right femoral vein, and right femoral artery were cannulated. Then, a 5 cm incision was made from the right fourth intercostal space, and the right atrium was reached under direct vision (Figure 1). Cardiac arrest was achieved with antegrade single-dose Del Nido cardioplegia. After right atriotomy, the mass adhered to the right atrium free wall with a stalk. The entire mass was excised together with the right atrial free wall. Afterwards, tricuspid ring annuloplasty was performed using a size 34 Edwards Lifesciences ring. The right atrium was closed with 3.0 prolene without using a patch. Cardiopulmonary bypass time was 120 min and cross-clamp time was 60 min. No blood products were used during or after the operation. The postoperative pathology report

was compatible with myxoma. The patient, who was taken to the intensive care unit after the operation, was extubate at the fourth hour. He was taken to the hospital on the first postoperative day. He was discharged on the 4th postoperative day because he had no problem.

Discussion

Myxomas, the most common benign cardiac tumor, arise from multipotent mesenchymal cells in the endocardium and can be round, oval, polypoid, pedunculated, or sessile (3). They typically occur in middle age and affect women more often than men. They are often found in the left atrium and are attached to the fossa ovalis by a stalk. Most myxomas occur sporadically but can sometimes be associated with a syndrome called the “Carney complex”, an autosomal dominant condition characterized by endocrinopathy and skin pigmentation. Myxomas in the Carney complex are usually multicentric, atypically localized, occur at younger ages, and recurrence is more common after surgery (2).

Patients may be asymptomatic and diagnosed incidentally using other imaging methods. Symptoms vary according to tumor location, size, and mobility. Stroke, mesenteric ischemia, spleen or kidney infarction, acute extremity



Figure 1. (A) Incision made in the right fourth intercostal space and giant right atrial myxoma seen with black arrow inside. (B) Appearance after surgical excision (could not be removed in one piece due to giant myxoma and small incision). (C) Postoperative view of the incision site. (D) Echocardiographic view of a right atrial myxoma with prolapsed right ventricle

ischemia, and pulmonary embolism may occur because of distal embolization of the tumor or its thrombus. It can mimic the signs of other valvular diseases and cause obstruction in any heart chamber or valve, causing symptoms of right or left heart failure. Any arrhythmia, including atrial fibrillation, ventricular tachycardia, and ventricular fibrillation, may occur because of disruption of the normal myocardium, and sudden death may develop. Patients may also present with non-specific symptoms such as fatigue, cough, fever, arthralgia, myalgia, weight loss, and erythematous rash.

Diagnosis can be made with TTE, which is generally accepted as the gold standard, whereas TEE can be useful when the findings are unclear. Complete surgical resection of cardiac myxoma provides the best clinical outcome. The surgical strategy for myxomas varies according to the location and size of the mass. Although it can be performed with the conventional method, median sternotomy, the operation can also be performed with minimally invasive methods in cases where the tumor is in the appropriate localization. Along with video-assisted port-access and endoscopic port-access methods, robotically assisted endoscopic methods have also been used. Kadiroğulları et al. (4) showed that myxoma excision can be performed safely and effectively with robotic-assisted endoscopic surgery. Catheter-based strategies are not recommended in cases of myxoma because of potential embolization.

In this case report, we report a rare case of giant right atrial myxoma, which was admitted with mild tricuspid valve regurgitation and shortness of breath and surgically removed using minimally invasive methods. Using this method, the patient could be discharged without using any blood products, with a shorter intensive care unit and hospital stay

compared with sternotomy. In addition, patient satisfaction was achieved in terms of cosmetics. In the literature, Naser et al. (5) reported a case of giant myxoma (9.8 x 7.8 cm) in the right atrium with signs of right heart failure. However, in this case, it was performed with a median sternotomy, and a pericardial patch was used (5). Beiras-Fernandez et al. (6) reported a case of giant myxoma (9 x 7 cm) in the right atrium that caused cardiovascular collapse and in which sternotomy was preferred. On the other hand, Gaisendrees et al. (7) reported a case of giant left atrial myxoma (5 x 7 cm), which was removed by minimally invasive surgery by making an 8 cm right anterior thoracotomy incision.

In patients with giant myxoma in the right atrium, surgery can be performed safely and effectively with minimally invasive methods instead of conventional median sternotomy, with appropriate localization and dimensions. With this method, hospital and intensive care hospital stays can be reduced and better cosmetic results can be achieved.

Ethics

Informed Consent: Obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: E.B., O.F.B., Design: E.B., O.F.B., R.C., E.Ş., Data Collection or Processing: E.B., O.F.B., R.C., Analysis or Interpretation: E.B., O.F.B., E.Ş., Literature Search: E.B., O.F.B., R.C., Writing: E.B., O.F.B., E.Ş.

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