Cardiac capillary hemangioma originating from the mitral valve

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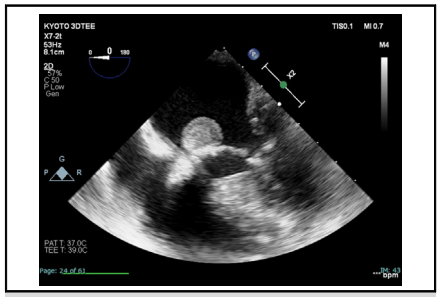

Preoperative transesophageal echocardiography of a ball-like tumor.

Cardiac hemangiomas are rare benign vascular tumors. Although they have been reported everywhere in the heart, those localized in the mitral valve are extremely rare. We here report a case of a 56-year-old woman, who underwent surgical removal of a mass arising from the mitral valve, which was confirmed as a capillary hemangioma. Ethics review is not required for case report implementation at our institution. Written informed consent for publication of study data was obtained from the patient for publication.

CENTRAL MESSAGE

We report the successful surgical removal of a capillary hemangioma originating from the mitral valve.

CASE REPORT

A 56-year-old frail woman with a body surface area of 1.1 m^2, with end-stage renal failure on hemodialysis, was referred to our department for surgical intervention of a mass attached to the mitral valve, discovered incidentally before undergoing surgery for a bilateral pearl tumor.

The patient was generally asymptomatic, but occasionally complained of shortness of breath and palpitations. Preoperative transesophageal echocardiography revealed no mitral regurgitation, mild mitral stenosis, and a relatively luminous, heterogeneous, ball like tumor of 15.5 × 13.5 mm attached to left atrial side of the anterior mitral leaflet (Figure 1, *A*). The tumor seemed to have no stalk or blood flow signal, which was initially thought to be left atrial myxoma or thrombi. No obvious structures were observed adhering to the aortic, tricuspid, or pulmonary valves. Coronary angiography revealed no obvious stenotic lesion and failed to show any tumor blush. Cine cardiac magnetic resonance imaging (MRI) also revealed a low-intensity mass on the mitral valve of 13 × 12 mm (Figure 1, *B*).

Surgical treatment indication was based on the size of the mitral valve tumor, to prevent embolisms. Through a median sternotomy, we initiated cardiopulmonary bypass with ascending aortic cannulation and bi-caval venous drainage. Upon right atriotomy, a superior transseptal approach was employed for better visualization of the mitral valve. Observation of the mitral valve revealed a non-stalked mass at the calcified annulus of the anterior mitral leaflet (A3) (Figure 1, *C*). The mass was a purplish-brownish, solid, and smooth ball-like tumor and was easily removed by shave excision as a lump without injuring the mitral valve leaflet. Intraoperative pathology confirmed the absence of malignant findings. The remainder of the mitral valve and sub-valvular apparatus appeared grossly normal. Due to a mild mitral regurgitation between A3 and the posterior commissure, 5 to 0 polypropylene stitches were used to plicate the area, and regurgitation absence was confirmed with a water injection test.

The specimen removed was approximately 10 mm in length (Figure 2, *A*). Postoperative tumor histopathology revealed a proliferation of capillary-sized vessels observed in

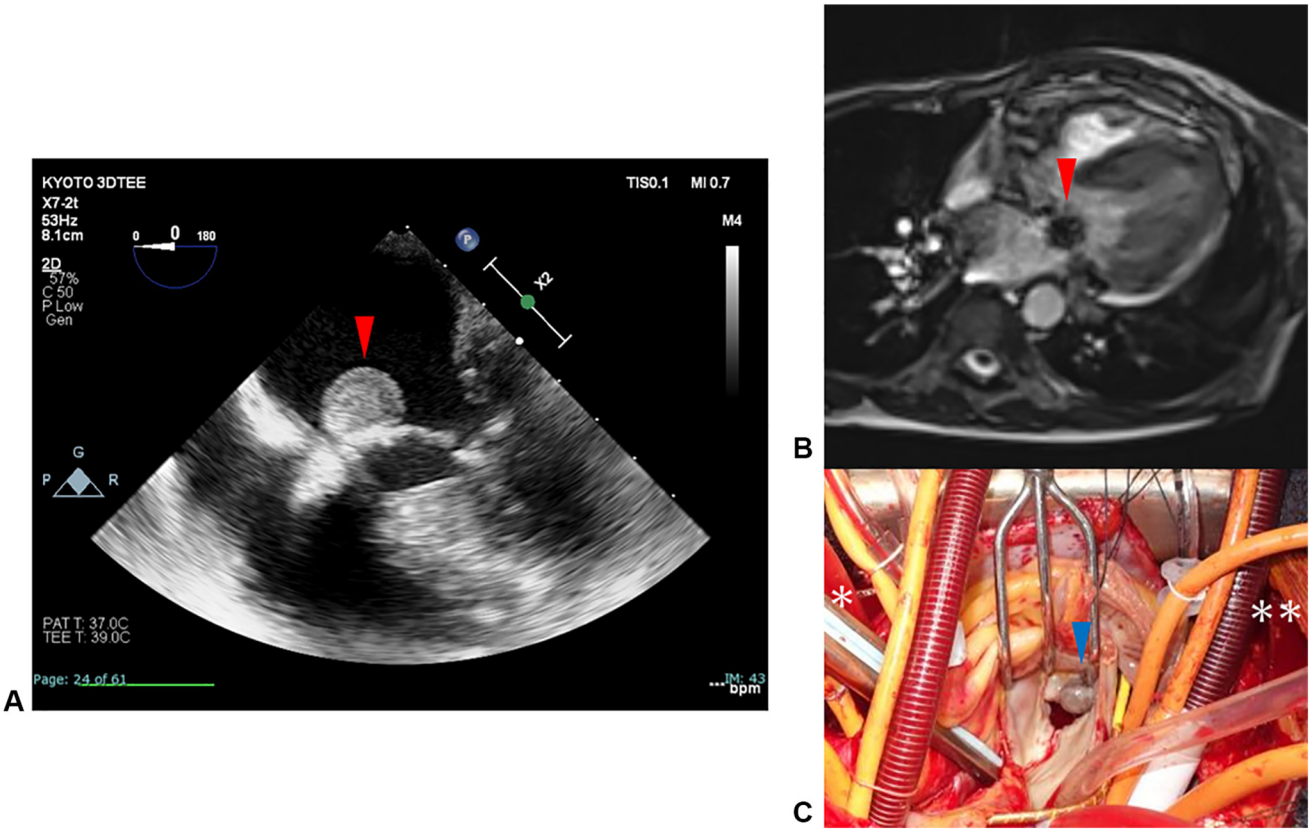

FIGURE 1. A, Preoperative transesophageal echocardiography shows a relatively luminous, heterogeneous, ball-like tumor of 15.5 × 13.5 mm (*red arrowhead*) attached to the anterior mitral leaflet. B, Cine cardiac magnetic resonance imaging shows a low-intensity mass lesion on the mitral valve (*red arrowhead*). C, Surgical view through right atriotomy and transseptal approach demonstrates tumor on the mitral valve (*blue arrowhead*). *Cranial side. **Caudal side.

a fibrous background, compatible with cardiac capillary hemangioma (Figure 2, *B* and *C*).

Due to the frailty caused by long-term hemodialysis, a tracheotomy was necessary for weaning from the mechanical ventilation system. Postoperative echocardiography revealed favorable results without any residual tumor on the mitral valve. Following rehabilitation, and closure of tracheotomy, the patient was discharged 2 months after the surgery. The patient is currently in continuous follow up.

DISCUSSION

Cardiac hemangiomas are rare benign vascular tumors of the heart accounting for 2% of primary cardiac tumors, which are classified as capillary, cavernous, and arteriovenous hemangiomas.[1,2] While hemangiomas can be found in any heart chamber, hemangiomas arising from the aortic or mitral valve area are extremely rare, with only a few cases being reported to date.[3,4] According to a previous report, mitral valve hemangiomas originate in the atrial aspect of the valve and more commonly involve the anterior leaflet (66.7%). Furthermore, most of these tumors are cavernous hemangiomas; capillary hemangiomas are even rarer.[3] As is common with any cardiac tumor, mitral valve hemangiomas may cause thromboembolism or mechanical interference with the valvular function and therefore surgical resection is indicated.[5]

Often, preoperative accurate diagnosis is challenging and evasive; in this report, the initial diagnostic impression was thought to be left atrial myxoma or thrombus, however, the final diagnosis was only made after surgical removal of the tumor and intraoperative histological examination, discarding malignant findings and therefore managing to avoid mitral valve replacement (MVR) in a frail patient with mitral annular calcifications. Additionally, next time we encounter a similar case, we will perform a minimal invasive surgery. Generally, there are no reports of recurrence after resection of cardiac hemangioma,[3] we will carefully observe the postoperative course of this rare tumor.

CONCLUSIONS

This report describes an effective treatment for a very rare cardiac tumor that avoided MVR for our frail patient

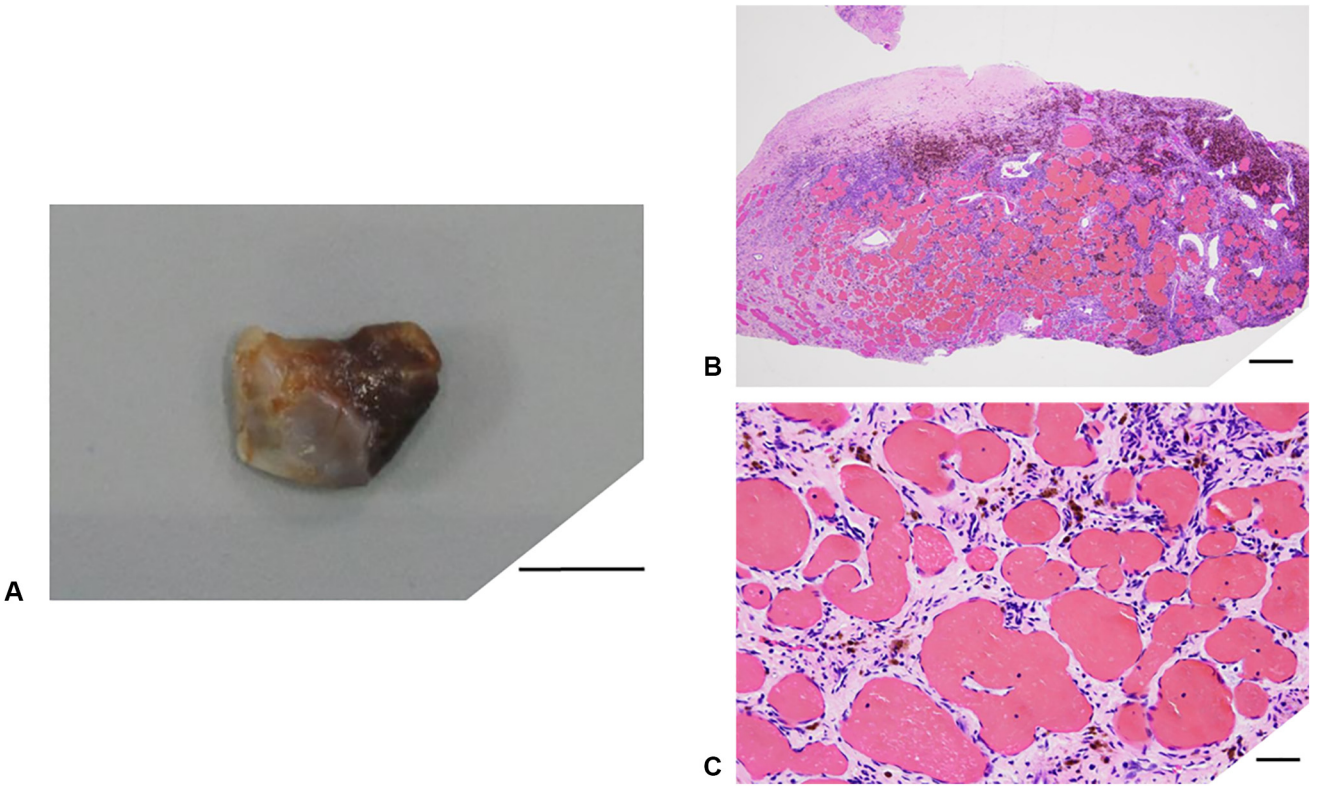

FIGURE 2. A, Macroscopic image of the tumor (scale bar, 5 mm). B and C, Hematoxylin and eosin stains of the tumor. B, Histologically, proliferation of capillary-sized vessels is observed in a fibrous background (scale bar, 500 μm). C, Higher magnification (scale bar, 50 μm).

with intraoperative testing serving as a surgical decision-making reference case.

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