

CASE REPORT

Two cases of cardiac hemangioma in different anatomical locations presenting with chest pain and palpitation

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Funding information

No institutional funding.

Abstract

Cardiac hemangiomas are benign, slow-growing tumors among the most common soft tissue tumors in the human body. Surgical resection is highly recommended for cardiac hemangiomas in symptomatic patients. We report our cases with a review of the literature on cardiac hemangiomas.

KEYWORDS

capillary, cavernous, heart, hemangioma

1 | INTRODUCTION

Cardiac hemangiomas are benign, slow-growing tumors among the most common soft tissue tumors in the human body, comprising about 7% of all benign tumors.¹ Most of the tumors are superficial lesions more commonly found in the head and neck region, but they may also involve internal organs such as the liver and spleen. Hemangiomas are classified histologically into capillary, cavernous, and arteriovenous types.²

Hemangiomas are characterized by benign proliferation of vascular channels ranging from capillary to cavernous in size lined by endothelial cells.³ The capillary hemangioma has a lobulated appearance composed of the increased number of endothelial cells forming small, capillary-like vessels. The cavernous hemangioma is composed of multiple thin-walled dilated vessels.⁴

Cardiac hemangiomas are sporadic primary tumors of the heart and constitute only 2–3% of primary cardiac tumors in any part of the heart, including the endocardium, myocardium, and epicardium.⁵ Pathologic diagnosis is still the gold standard for diagnosing cardiac hemangioma; however, imaging techniques such as computed

tomography and magnetic resonance imaging offer valuable insights.⁶

Cardiac hemangioma is a sporadic, benign tumor with no metastasis. Despite its histopathologic benignity, some literature reports that cardiac hemangioma is clinically dangerous and can have life-threatening complications such as syncope, stroke, and even sudden death.⁷

However, cardiac hemangioma characteristics remain unknown due to its rarity, and our knowledge of this disorder is derived from case reports.⁸ We report two cases with a review of the literature on cardiac hemangiomas.

2 | CASE PRESENTATION

2.1 | Case 1

A 65-year-old man, a known case of ischemic heart disease, was admitted to our hospital due to intermittent palpitation, which began two years ago and became worse during the last months. Echocardiography (ECG) showed regular rhythm. Mild cardiomegaly was seen on chest X-rays. Other laboratory data, including cardiac biomarkers and electrolytes, were within normal limits.

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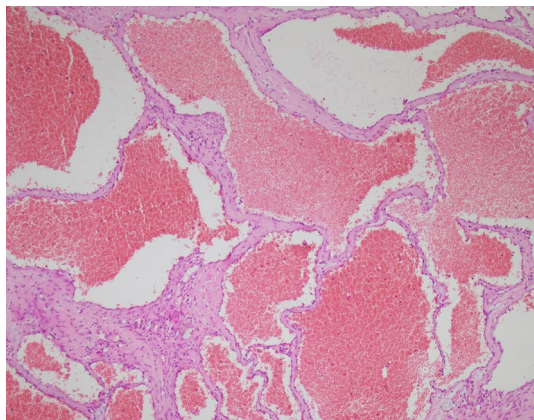


FIGURE 1 Pathologic finding of cardiac hemangioma shows ill-defined aggregates of dilated packed, thin-walled capillaries filled with blood cells (H&E, $\times 100$)

Initially, the cardiac tumor was not considered the differential diagnosis. Echocardiography showed normal left ventricular size with moderate systolic dysfunction (ejection fraction: 40%). The right ventricle showed moderate dysfunction, as well. Transthoracic echocardiography demonstrated an echo-dense mass markedly compressing the right ventricle measuring $2 \times 2 \times 1$ cm. The mass was attached to the middle and lower segment of the septum, and the mass oscillated slightly with the cardiac cycle.

We concluded that the patient had cardiac hemangiomas. The patient underwent surgery, and right ventricular mass was resected without complications and sent for pathology. The patient was released from the hospital 12 days after surgery and showed no signs of recurrence on echocardiography at a 12-month check-up.

The excised specimen was $2 \times 2 \times 1$ cm. The soft tissue was gray and dark red. Histopathological examination after surgery showed dilated and tortuous capillary vessels packed with red blood cells consistent with cardiac hemangioma of cavernous type (Figure 1).

2.2 | Case 2

A 58-year-old woman known for ischemic heart disease and chronic renal failure was scheduled for coronary bypass, presenting chest pain. Chest radiography revealed mildly increased heart size. Electrocardiography (ECG) showed a heart rate of 78/min with sinus rhythm and an incomplete right bundle branch block. Transthoracic echocardiography demonstrated moderate systolic dysfunction (ejection fraction: 40%) and a mass markedly compressing the right atrium measuring $2 \times 1 \times 1$ cm.

The three-vessel disease was diagnosed on the coronary angiogram, and the angiographic findings were compatible with the right atrial cardiac hemangioma.

The patient underwent surgery via median sternotomy for coronary bypass and resection of the right atrial mass. Tumor resection was done without any complications. The coronary artery was bypassed using a saphenous vein graft. The patient was released from the hospital 15 days after surgery. At a 12-month follow-up, there was no sign of recurrence on echocardiography.

The excised specimen was $2 \times 1 \times 1$ cm. The soft tissue was gray and dark. Histopathological examination after surgery showed thin and tortuous capillary vessels packed with red blood cells consistent with cardiac hemangioma of capillary type. Furthermore, the tumor was positive for endothelial markers CD31, negative for tumor protein s100 and cytokeratin, and low for KI67. Therefore, the diagnosis of the capillary hemangioma was made (Figure 2).

3 | DISCUSSION

Myxoma is the most common tumor among benign cardiac tumors.⁸ Cardiac hemangiomas are seen as hyper-echoic lesions in echocardiography and are intensely enhanced on computed tomography with contrast.⁴

The clinical presentation depends on multiple factors, including location, size, growth rate, and individual tolerance. Some cardiac hemangiomas are asymptomatic and

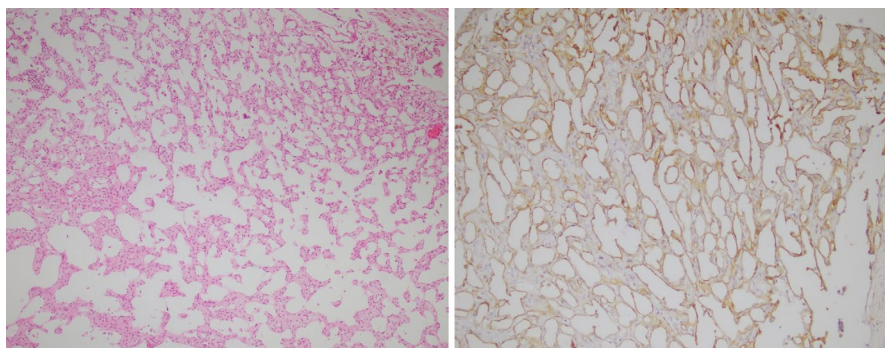


FIGURE 2 Histopathologic slides from the resected tumor. Hematoxylin-eosin staining (Left) (100 \times); CD31 staining (Right) (100 \times)

TABLE 1 Main clinical presentations of cardiac hemangiomas

Symptoms	Prevalence
Dyspnea on exertion	43%
Arrhythmias	17%
Pseudo-angina	13%
Signs of right heart failure	13%
Pericarditis or pericardial effusion	8%
Failure to thrive	6%

TABLE 2 Most frequent localization of cardiac hemangiomas

Localization of cardiac hemangiomas	Prevalence
Right ventricle	31%
Left ventricle	29%
Right atrium	17%
Interatrial septum	10%
Interventricular septum	7%
Left atrium	6%

discovered during cardiac surgery or autopsy. According to Brizard et al.,¹⁰ among 23 cases, the most frequent clinical presentation was dyspnea on exertion. Less frequently, patients present with arrhythmias, pseudo-angina, signs of right heart failure, pericarditis or pericardial effusion, and failure to thrive (Table 1).

Cardiac hemangiomas can occur in any chamber. They may be predominantly intramural or endocardial.⁷ Fifty-six cases were reviewed by Han et al.¹¹ According to this study, the most frequent localization of cardiac hemangiomas was the right ventricle in 20 (35.7%) cases. Less frequently, it can occur in the left ventricle, the right atrium, the interatrial septum, the interventricular septum, and the left atrium (Table 2).

Despite its rarity, cardiac surgeons should consider the diagnosis of cardiac tumors. When cardiac hemangioma is suspected, echocardiography and electrocardiography are indicated for a preliminary diagnosis to rule out myxoma, primarily when hemangioma arises from the left atrial wall mimicking the presentation of myxoma.⁹

Surgical resection of the tumor is highly recommended for cardiac hemangiomas in symptomatic patients after carefully considering the risks and benefits of surgery.⁷ In asymptomatic hemangiomas, surgery might not always be necessary, mainly when extensive excision is necessary.¹¹ If a cardiac hemangioma cannot be completely resected, debulking should be considered.⁴ The long-term outcome of patients after surgery is excellent.¹⁰ A case of recurrence has not been reported thus far. Therefore, surgery is the best way to treat cardiac hemangioma.⁸

In our cases, the tumor was located in the right atrium and the right ventricle, and after surgery, our patients remained stable without tumor recurrence during the 12-month follow-ups.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

AUTHOR CONTRIBUTION

Sahand Mohammadzadeh and Neda Soleimani contributed to the writing and the revision of the article. Mohammad Hossein Anbardar contributed to data collection.

ETHICAL APPROVAL

The research has been carried out by the World Medical Association Declaration of Helsinki. The study was approved by the Ethics Committee of Shiraz University of medical science.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in reference number 11.

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REFERENCES

- Moniotte S, Geva T, Perez-Atayde A, Fulton DR, Pigula FA, Powell AJ. Cardiac hemangioma. *Circulation*. 2005;112(8):e103-e104.
- Wang Y, Liu S, Yang J, Gu T, Zhang L. Cardiac hemangioma caused ventricular arrhythmia: a rare case and literature review. *J Electrocardiol*. 2017;50(5):667-670.
- Chen Y. Surgical resection of a giant cardiac hemangioma encroached upon the right coronary artery: a case report. *Authorea Preprints*. 2020.
- Delisle V, Perron J, Lafrenière-Bessi V, et al. Neonatal cardiac arrest from left ventricular cardiac hemangioma: a surprising presentation. *Can J Cardiol*. 2019;35(4):544.e3-544.e5.
- Inoue T, Kitamura T, Torii S, Miyaji K. Cardiac hemangioma with epicardial infiltration. *J Thorac Dis*. 2018;10(9):E704.
- Yamamoto H, Beppu S. Left ventricular cardiac hemangioma in a patient with chronic heart failure. *J Med Ultrason*. 2018;45(3):509-513.

7. Wang C, Chen H, Sun L, Mei Y. Cardiac cavernous hemangioma coexisting with pulmonary cavernous hemangiomas and giant hepatic hemangioma. *Ann Thorac Surg*. 2017;103(2):e149-e152.
8. Bell P, DePaepe S, Moore L. An unusual case of acute cardiac tamponade caused by a cardiac hemangioma. *Am J Emerg Med*. 2021;47:327.e1-327.e2.
9. Ghavidel AA. Extremely rare and giant cavernous cardiac hemangioma. *Turk J Thorac Cardiovasc Surg*. 2020;28(1):213-214.
10. Brizard C, Latremouille C, Jebara VA, et al. Cardiac hemangiomas. *Ann Thorac Surg*. 1993;56:390-394.
11. Han Y, Chen X, Wang X, Yang L, Zeng Y, Yang J. Cardiac capillary hemangioma: a case report and brief review of the literature. *J Clin Ultrasound*. 2014;42:53-6.

How to cite this article: Anbardar MH, Soleimani N, Mohammadzadeh S. Two cases of cardiac hemangioma in different anatomical locations presenting with chest pain and palpitation. *Clin Case Rep*. 2022;10:e05495. doi:[10.1002/ccr3.5495](https://doi.org/10.1002/ccr3.5495)