



## CASE REPORT

# Primary right atrial angiosarcoma misdiagnosed as aortic intramural hematoma



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**Summary** The overall incidence of cardiac tumor is very low, and malignant cardiac tumors account for only 25% of all cardiac tumors. Angiosarcomas are the most common type of malignant cardiac tumors, characterized by rapidly proliferating, extensively infiltrating anaplastic cells derived from blood vessels and lining irregular blood-filled spaces. We present a 26-year-old man with angiosarcoma involving the right atrium, which was misdiagnosed as aortic intramural hematoma by computed tomography, finally confirmed by transesophageal echocardiography during the operation.

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## 1. Introduction

Primary cardiac tumors are rare, with an incidence at autopsy ranging from 0.0017% to 0.033%, and most of them are

benign. Malignant cardiac tumors only account for 25% of all cardiac tumors. Angiosarcomas are the most common type of malignant cardiac tumors in adults.<sup>1</sup> At present, transesophageal echocardiography (TEE) is regarded as a useful tool in determining tumor size and anatomical localization with high sensitivities of up to 97%, although computed tomography (CT) and magnetic resonance imaging (MRI) have excellent diagnostic advantages with regard to tumor delineation and spread.<sup>2</sup>

We present a 26-year-old man with primary right atrial angiosarcoma—which was initially misdiagnosed as aortic intramural hematoma (IMH) by CT—that was finally confirmed by TEE during the operation.

Conflicts of interest: The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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## 2. Case Report

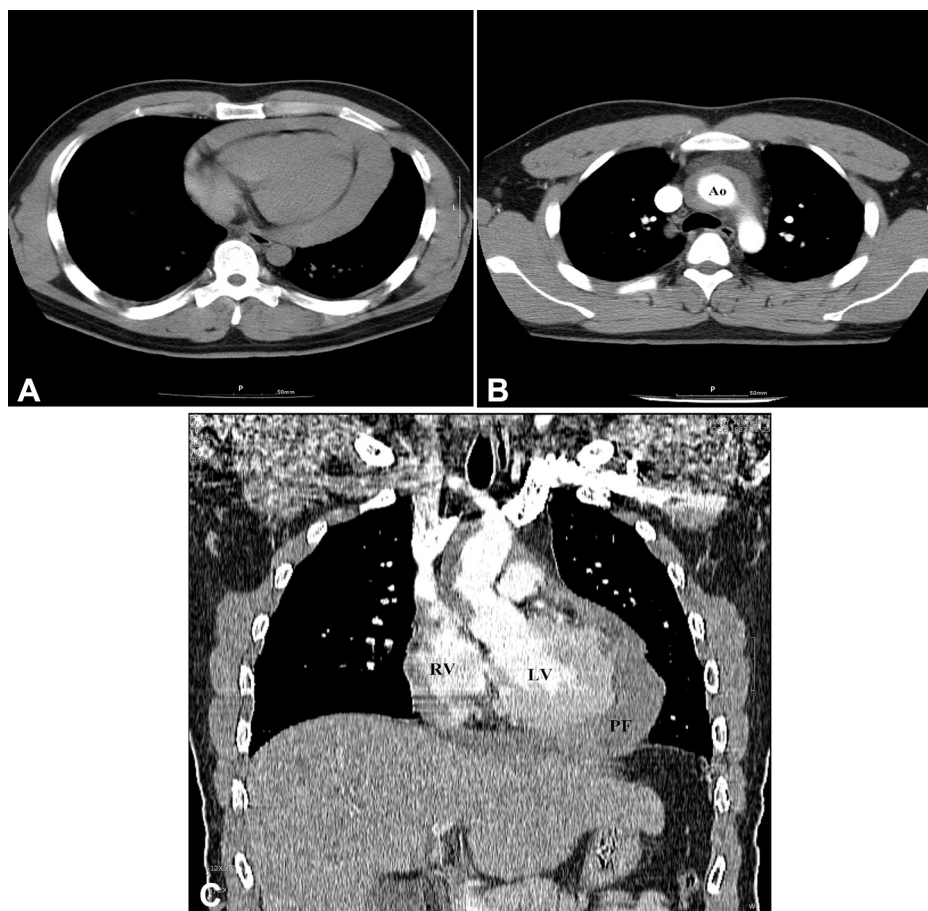
A 26-year-old man who was transferred to our hospital was diagnosed to have aortic IMH with cardiac tamponade. On admission, the patient showed confused mentality and heavy sweating. His initial vital signs were as follows: systolic blood pressure, 60–70 mmHg; heart rate, 130–140 beats/minute; peripheral oxygen saturation, 70–75%. The jugular vein was engorged, but hepatomegaly or audible cardiac murmurs were not detected. A chest X-ray showed cardiomegaly with a cardiothoracic ratio of 58%. An electrocardiogram (ECG) showed sinus tachycardia with a heart rate of 128 beats/minute and T abnormality of inferior leads. A chest CT scan previously taken from another hospital revealed IMH and pericardial effusion without any evidence of abnormal mass in chest structure (Fig. 1).

Further imaging studies such as transthoracic echocardiography (TTE), ECG gating cardiac CT, or MRI could not be conducted because of poor compliance and unstable vital signs. An emergency operation for the resection of IMH and hemiarch replacement of the ascending aorta was planned although aortic IMH contained only in the ascending aorta

without any distal extension is rare in young healthy individuals.

During the anesthetic induction, arterial cannulation for monitoring of arterial blood pressure was performed on both radial arteries. Anesthesia was intravenously induced with 0.3 mg/kg etomidate and 0.6 mg/kg rocuronium. After tracheal intubation, anesthesia was maintained by 1–2 vol.% of sevoflurane and 0.5–20 µg/kg/minute of remifentanyl. After induction, vital signs showed consistent hypotension (60–70 mmHg of systolic blood pressure), tachycardia (140–160 beats/minute of heart rate), and hypoxia (70–75% of peripheral oxygen saturation). Inotropic and vasoactive drugs such as norepinephrine (0.1–0.5 µg/kg/minute), epinephrine (0.01–0.05 µg/kg/minute), dobutamine (2–5 µg/kg/minute), and vasopressin (0.0003–0.001 units/kg/minute) were infused.

Because the patient's vital signs were unstable, the cardiac surgeon performed peripheral cannulation for an emergent cardiopulmonary bypass prior to sternotomy to rapidly stabilize circulation and facilitate surgery for thoracic aorta dissection. An 18F arterial cannula and a 22F venous cannula were inserted through the right femoral artery and vein under TEE guidance.



**Figure 1** Chest computed tomography findings. (A) Unenhanced scan shows large pericardial fluid collection with computed tomography density measurements consistent with hemopericardium. (B) Enhanced axial scan shows aortic intramural hematoma without any evidence of abnormal mass in chest structure. (C) Enhanced coronal view shows large pericardial fluid collection and aortic intramural hematoma. Ao = aorta; LV = left ventricle; PF = pericardial fluid; RV = right ventricle.

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