

Cavernous Hemangiomas in the Right Ventricular Outflow Tract

A 71-year-old female with no abnormal disease history presented to our clinic for examination revealed that the right ventricular outflow tract (RVOT) occupied lesion for 2 weeks. On admission, the physical examination revealed a heart rate 79 beats/min with sinus rhythm, no cardiac murmur can be noticed. Chest X-ray revealed scoliosis (Figure 1A), with normal pulmonary vascular markings. Cardiac magnetic resonance imaging (MRI) detected a small nodule in the RVOT moves slightly with the systole and diastole of the right ventricle (RV), suspected thrombus (Figure 1B, arrowhead, 14 mm×10 mm, Videos S1, S2). Positron emission tomography scan showed that the metabolism level of RVOT lesions did not increase significantly (Figure 1C, Video S3).

The patient received surgical intervention under cardiopulmonary bypass. After median sternotomy, the RVOT was incised, the space-occupying lesion was found with a clear boundary, complete capsule, dark red color, the base was attached to the free wall of the RV, and we successfully resected the lesion (Figure 1D-E,

E-PAGE ORIGINAL IMAGE

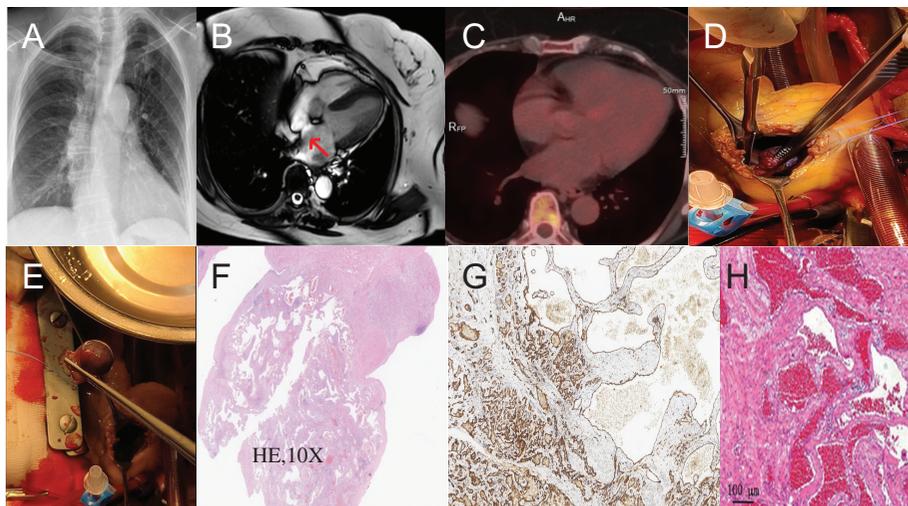


Figure 1. A) No cardiac murmur can be noticed. Chest X-ray revealed scoliosis. B) Cardiac magnetic resonance imaging detected a small nodule in the right ventricular outflow tract (RVOT) moves slightly with the systole and diastole of the right ventricle, suspected thrombus C) Positron emission tomography scan showed that the metabolism level of RVOT lesions did not increase significantly. D-E) A clear boundary, complete capsule, dark red color, and the base was attached to the free wall of the right ventricle, we successfully resected the lesion. F-G) Postoperative pathological examination results indicated: Hemangiomas, some cavernous hemangiomas, and some cellular capillaries. Immunohistochemistry and special stains showed: vascular endothelial CD31 (+), CD34 (+), Fil-1 (+), D2-40 (-), FOSB (+), SMA (vascular pericytes +), HHV8 (-), Ki67 (<2%), AE1/AE3 (-), S100 (-), Desmin (-). H) The surface of the sinus wall is covered with flat endothelial cells, and the sinusoids are separated by fibrous grids.

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arrowhead). The patient recovered without complications and was discharged on the fourth day later.

Postoperative pathological examination results indicated: Hemangiomas, some cavernous hemangiomas, some cellular capillaries. Immunohistochemistry and special stains showed: vascular endothelial CD31 (+), CD34 (+), Fil-1 (+), D2-40 (-), FOSB (+), SMA (vascular pericytes (+)), HHV8 (-), Ki67 (<2%), AE1/AE3 (-), S100 (-), Desmin (-) (Figure 1F-G). The tumor body is composed of irregular blood sinuses, and the blood sinuses are connected with each other. The surface of the sinus wall is covered with flat endothelial cells, and the sinusoids are separated by fibrous grids (Figure 1H).

Most patients with cardiac cavernous hemangioma have no characteristic clinical symptoms. Due to the differences in tumor size, growth site, and growth mode, patients may show various clinical symptoms. It is very important to ligate the feeding vessels and completely resect the tumor intraoperative. Although cardiac hemangiomas are benign tumors, surgical resection is usually the first choice

for treatment. The treatment of cardiac cavernous hemangioma should be based on the size of the tumor, the growth site, and the relationship with the surrounding tissue structure.

Informed Consent: Written informed consent was obtained from the patient for the publication of this case report and accompanying videos.

Declaration of Interests: The authors have no conflict of interest to declare.

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Videos 1-2: Cardiac MRI detected a small nodule in the RVOT moves slightly with the systole and diastole of the RV.

Video 3: PET-CT showed that the metabolism level of RVOT lesions did not increase significantly.