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A Rare Pulmonary Artery Mass: Microvenular Hemangioma

An 11-year-old boy was admitted to our hospital due to chest tightness for 4 weeks after exercise. Chest x-ray showed an enlarged heart shadow (Figure 1A). Transthoracic echocardiography (TTE) revealed a solid mass in the pulmonary artery (PA) (red arrow, 32 × 30 mm), resulting in PA stenosis with a maximal flow velocity of 4.0 m/s and peak systolic gradient of 64 mm Hg (Figure 1B-E, Supplementary Videos 1-2). In order to observe the blood supply of the tumor to preliminarily explore whether it is benign or malignant, subsequent contrast echocardiography was performed, which displayed mild enhancement in the pulmonary mass (red arrow) (Figure 1F, Supplementary Video 3). Further inquiry revealed that the patient underwent cardiac magnetic resonance imaging (MRI), which indicated a solid mass in the PA (red arrow, 34 × 29 mm) (Figure 1G and H). Because of concern for pulmonary embolism, we recommended operative resection of the mass. The solid mass of the PA was successfully resected, and no PA wall involvement and extraluminal dilation were observed during the operation (Figure 1I). Histopathological examination of the mass showed pulmonary microvenular hemangioma (MVH) (Figures 1J-L). The postoperative course was uneventful, and the patient was discharged in a good condition 4 days after surgery.

To the best of our knowledge, MVH is a rare, slow-growing, acquired benign hemangioma, first reported by Hunt in 1991, which usually occurs in the trunk or limbs of young and middle-aged people without conscious symptoms generally.[1,2] This is the first case of PA MVH diagnosed by our department. The clinical manifestations of this case are chest tightness and dyspnea. Since lung CT excludes lung and bronchial diseases, it is considered a secondary symptom caused by MVH enlargement and PA growth. Preoperative diagnosis of MVH and accurate judgment of its degree of involvement can provide a reliable basis for clinical timely intervention.[3,4] And MVH can be diagnosed by various imaging methods such as TTE, computed tomography, computed tomography angiography, and MRI, so as to understand the texture, size, shape, location, attachment, activity, depth of invasion, and hemodynamic changes of the mass, which is complementary to the clinical manifestations in forming a quasi-diagnosis.[5] The diagnosis of MVH depends on histopathological examination. Under the microscope, small vessels are seen to proliferate, with irregular infiltrating growth, and most of the vascular cavities are narrow or occluded. The expression of CD31, CD34, and Ki67 in vascular endothelial cells was detected by immunohistochemistry.[6] In view that MVH belongs to a benign tumor, surgical resection is the first choice of treatment, and no recurrence has been reported in the literature.[1]

Informed Consent: We stated that written informed consent was obtained from the patient for the publication of this case report and accompanying images.

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E-PAGE ORIGINAL IMAGE

Honghu Wang[1,#]
Zhengyang Han[1,#]
Huican Duan[1]
Ruifang Zhang[2]

[1]*Department of Ultrasound, the First Affiliated Hospital of Zhengzhou University, Zhengzhou University, Zhengzhou, Henan, China*
[2]*Department of Cardiology, the First Affiliated Hospital of Zhengzhou University, Zhengzhou University, Zhengzhou, Henan, China*

#These authors contributed equally to this work.

Corresponding author:
Ruifang Zhang
✉ zhangruifang999@hotmail.com

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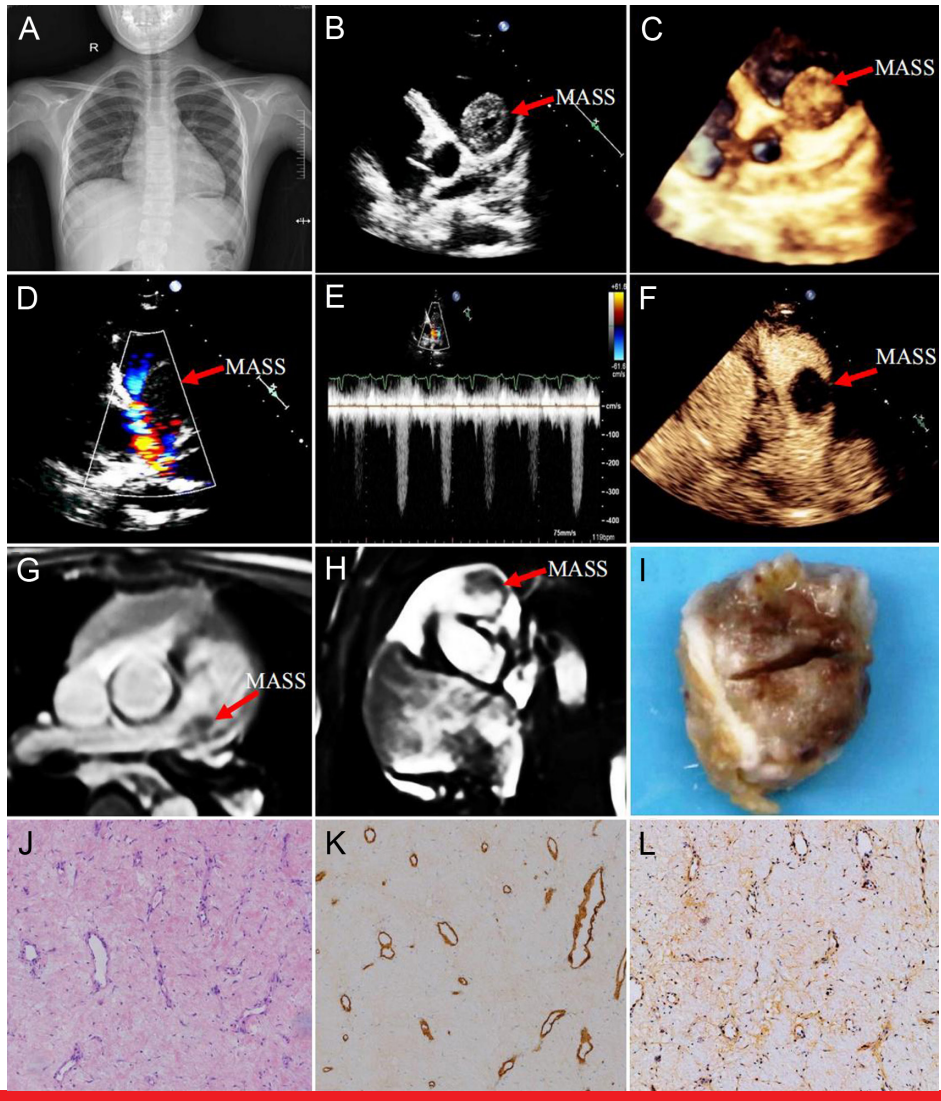

Figure 1. AThe chest x-ray indicated an enlarged heart. B: TTE revealed there was a mass on the pulmonary artery. C: 3D echocardiography reflected the mass in the pulmonary artery. D: Color Doppler flow imaging showed a filling defect in the pulmonary artery at the mass. E: The peak velocity and pressure gradient of blood flow in stenosis were measured by continuous Doppler. F: Contrast echocardiography displayed almost no contrast medium enhancement in the interior of the mass and a little enhancement in the base of the mass. G and H: MRI demonstrated a mass located in the pulmonary artery with an uneven high signal enhancement pattern on late gadolinium-enhanced images. I: The section of the gross specimen is gray-white and gray-red jelly. J: Histological examination showed a large number of spindle cells and microvessels. K and L: Immunohistochemistry revealed that the expression of vascular endothelial cytokines was positive. 3D, three dimensional; MRI, magnetic resonance imaging; TTE, transthoracic echocardiography.

Supplementary Video 1: TTE revealed a solid mass in the pulmonary artery.

Supplementary Video 2: CDFI indicateed pulmonary artery stenosis caused by the mass.

Supplementary Video 3: Contrast echocardiography displayed mild enhancement in the mass.

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