Cardiac Hemangioma

A 55-year-old female found to have a cardiac mass during evaluation of dizziness. Cardiac CT showed lesion of soft tissue density confined in right atrium.

Clinical history: A 55-year-old female found to have a cardiac mass during evaluation of dizziness.

Figure 1: Chest CT
Figure 2: Coronal T1-weighted image

Figure 3: Coronal T1+C
Findings: Her cardiac CT showed one space-taking lesion of soft tissue density confined in right atrium, without extension into adjacent organ. Cardiac MRI showed one well-defined intra-cardiac mass in right atrium attaching to myocardium. The tumor showed intermediate to bright on T1- and T2-weighted images and enhancement after Gd-DTPA administration.

Diagnosis: Cardiac hemangioma

Discussion: The most frequent mass within a cardiac chamber is thrombus. The overall frequency of cardiac tumor is 0.15 percent in echocardiographic series. Of all cardiac tumors, primary tumors are rare, while secondary tumors are about 40 times more frequent than primary cardiac tumors. Cardiac hemangiomas are composed of endothelial cells that line interconnecting vascular channels. They are usually asymptomatic when diagnosed after infancy, and the commonest presentation is dyspnea on exertion if symptomatic.

Imaging findings: Cardiac hemangiomas may involve the endocardium, myocardium, or epicardium. They can arise from all chambers and also pericardium. On T1-weighted images, hemangiomas are intermediate to hyperintense. On T2-weighted images, they are hyperintense to myocardium. After Gd-DTPA administration, they usually have rapid enhancement during first-pass Gd contrast infusion because of their high vascularity, and usually show intense but inhomogeneous enhancement.

Differential diagnosis: There are some methods to differentiate between thrombus and tumor on medical images. A thrombus shows low signal intensity on gradient-echo images, while tumors are hyperintense to myocardium. After Gd-DTPA administration, they usually have rapid enhancement during first-pass Gd contrast infusion because of their high vascularity, and usually show intense but inhomogeneous enhancement.

Differential diagnosis: There are some methods to differentiate between thrombus and tumor on medical images. A thrombus shows low signal intensity on gradient-echo images, while tumors are hyperintense to myocardium. However, exceptions to this generalization are fresh blood clot can have high signal intensity, and some myxomas containing iron produce low signal and mimic thrombus. Besides, thrombus does not enhance after the administration of Gd-DTPA, whereas tumors show enhancement.

About 80 percent of primary cardiac tumors are benign, including myxoma, lipoma, papillary fibroelastoma, rhabdomyoma, and hemangioma. Cardiac pheochromocytoma is also reported and is very rare. Myxoma is the most common benign cardiac tumor. Myxoma is dumbbell shape, and is usually mobile with its shape varied during cardiac cycle.

One-fourth of primary cardiac tumors are malignant, with sarcomas being the most common, followed by primary cardiac lymphomas. There are features indicating malignancy of a primary cardiac tumor on medical images, including involvement of more than 1 cardiac chamber, wide point of attachment to the wall, necrosis within the tumor, extension outside the heart, and hemorrhagic pericardial effusion. Other signs of malignancy include intramural and intracavitary location, extension into the mediastinum, and rapid growth.

Conclusion: Cardiac hemangioma is a rare benign tumor of the heart. The differentiation of this benign tumor from the malignant types is essential in planning subsequent management. Cardiac MRI is a valuable tool to differentiate this tumor from other benign and malignant tumors.

References:
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Disclosures:

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