LEFT ATRIAL MYXOMA WITH AN UNUSUAL TUMOR VASCULARITY DEMONSTRATED BY ANGIOGRAPHY

—Report of Two Cases—

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We describe two cases of left atrial myxoma, demonstrating an unusual tumor vascularity as revealed by coronary angiograms. Both cases had suffered typical episodes of transient ischemic attack (TIA). Coronary angiography revealed tumor blood supply from coronary arteries in both cases, and also a leakage of contrast medium from the surface of the tumor blood vessels to the left atrium in one case. In the medical literature available in English reviewed so far, no report of such a leakage has been reported. Selective coronary arteriography can be a useful diagnostic method of delineating left atrial myxoma and its blood supply.

CARDIAC myxoma is a relatively rare tumor which accounts for approximately one-third of all primary cardiac neoplasms.¹ Clinical diagnosis of atrial myxoma by angiocardiology was first made in 1952.² Since then, many noninvasive methods have been developed to facilitate the diagnosis of this tumor, in particular echocardiography. However, false-positive and false-negative results have been reported.³⁻⁵ Therefore additional diagnostic aids are needed to confirm the diagnosis in some cases. Since 1969, 12 cases of atrial myxoma have been reported in the literature in which tumor vascularity was revealed by coronary arteriography.⁴⁻¹³ In this report we describe two patients with atrial myxoma demonstrating unusual tumor vascu-

larity as shown by selective coronary arteriography.

CASE REPORTS

Case 1.

A 49-year-old man was admitted to our hospital complaining of sudden onset dysarthria and palsy in his upper right extremity. Prior to admission, he had a 3-week history of dyspnea and chest pain on exertion, and had suffered episodes of recurrent TIA attacks. Physical examination on admission revealed nothing significant, and no abnormal neurological signs could be found. A chest X-ray revealed a normal cardiac silhouette, and no evidence of calcification in the cardio/pericardial silhouette nor of pulmonary venous congestion. The electrocardiogram was normal. However, M-mode and two-dimensional echocardiography revealed a large echogenic structure filling the left atrial cavity.

Key words:

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Fig.1. A-D. Case 1.

A: Coronary arteriogram, RAO view.

B: Coronary arteriogram, LAO view, showing the left circumflex artery (LCX) and two atrial branches (solid arrows) ending in a tumor blush (open arrow) in the left atrial cavity.

C: Levophase of pulmonary angiogram, RAO projection, reveals a large filling defect (open arrow) in the left atrial cavity.

D: Left atrial myxoma, of size 55 × 50 mm, gelatinous, highly vascular brownish-red.

Furthermore, the echogenic structure was found to be prolapsed across the mitral valve from the left atrium to the left ventricle during diastole. Cardiac catheterization demonstrated normal pressure in both the right and left chambers. Coronary arteriography showed two left atrial branches from the proximal left circumflex artery, which ended in a tumor blush in the left atrial cavity. The tumor blush occupied nearly the entire tumor (Fig. 1A-B). Pulmonary angiography in levophase revealed a large rounded filling defect occupying nearly the entire cavity of the left atrium (Fig. 1C). A large myxoma (Fig. 1D) was surgically removed from the left atrium using the biatrial approach. A highly vascular and hemorrhagic myxomatous tumor was seen on histologic examination. Histology showed a characteristic finding of myxoma:

there were nests of capillaries containing a lot of red blood cells.

Case 2.

A 67-year-old woman was admitted to our hospital with a two-month history of dyspnea on exertion. She suffered an attack of syncope and palsy in her left lower extremity in December 1985. Physical examination revealed nothing except for the presence of a grade II heart murmur in the 4LSB, which showed a rumbling character. The auscultatory diagnosis was moderate mitral stenosis with coexisting regurgitation. A chest X-ray revealed cardiomegaly and slight evidence of pulmonary venous congestion. The electrocardiogram showed a biphasic P wave in V1 to V2, indicating the presence of a left atrial overload. M-mode and two-dimensional

Fig.2. A-D Case 2.

A: Coronary arteriogram, RAO view.

B: Coronary arteriogram, LAO view, showing the right coronary artery (RCA) and two atrial branches (small arrows) ending in two lake-like poolings (arrow heads) in the left atrial cavity; from the poolings slight leakages are seen (large arrows).

C: Levophase of pulmonary angiogram, RAO projection, reveals a large filling defect (solid arrows) in the left atrial cavity.

D: Left atrial myxoma, of size 82 × 52 mm, with modest vascularity, P: cut end of the pedicle.

echocardiography revealed a large echogenic structure filling the left atrial cavity. Cardiac catheterization demonstrated a rise of pulmonary capillary wedge pressure to 20 mmHg. Coronary arteriography revealed two atrial branches from the sinus nodal artery and right coronary artery that ended in a tumor blush in the left atrial cavity. In addition, there was pooling at the stem of the tumor. From the pooling there was a slight leakage of contrast medium into the left atrium (Fig. 2A-B). Pulmonary angiography in levophase showed a large filling defect, which looked like a cluster of grapes in the left atrial cavity (Fig. 2C). Histology showed a characteristic finding of myxoma with only modest vascularity (Fig. 2D).

DISCUSSION

Soulen et al.¹⁴ have described 15 cases of coronary neovascularity, nine of which were associated with left atrial thrombus in the presence of mitral stenosis. Hemangiomas, vascular hamartomas, cardiac metastatic tumors and cardiac myxoma are expected to cause similar vascular changes and should be considered in the differential diagnosis. It is especially important to distinguish between left atrial myxoma and left atrial thrombus, but, in general, it is not so difficult to detect the difference between them. Most thrombi are stationary and extend into the left atrial appendage. However, in some cases echocardiography or even angio-

graphy fails to distinguish between left atrial myxoma and left atrial thrombus^{8,11} particularly in cases with rheumatic valvular disease like mitral stenosis. Marshall et al., in 1969, first described tumor vessels in atrial myxoma shown by selective coronary angiography. Recently it has been pointed out that coronary neovascularity is not a finding restricted to tumor. Patients with left atrial mural thrombi may have a neovascularity demonstrated by coronary arteriography.³ So it seems important to describe the difference of the vascular patterns between the two conditions. After the first report by Marshall et al⁶, 12 cases of neovascularities of left atrial myxoma have been reported in the literature so far.⁴⁻¹³ Myxoma is a neoplastic tumor with a pedicle, which also contains the tumor's blood vessel, thus giving it a different shape from an organized thrombus. Singh noted that the paucity of case reports demonstrating tumor blood supply might contribute to a failure to use coronary arteriography to detect this tumor.⁵ Starden⁸ stated that selective coronary angiography can give additional information. He noted that closer scrutiny of the angiogram was able to reveal in thrombi, but not in myxoma, lake-like vascular spaces without intervening "capillaries". However, in our second case, in which the patient had myxoma, there were two lake-like vascular spaces at the pedicle, and also some leakage from the lake-like space to the left atrium. Histological examination in this case showed no thrombus at the pedicle, but high vascularity and hemorrhaging. It is suggested that the rupture of the tumor can be followed by leakage of the blood from the tumor vessel to the left atrium showing a lake-like pooling on the angiogram. Olsson¹⁶ observed that, theoretically, necrosis of the tumor, especially at the pedicle, may obscure the vascularity, as is seen to occur in other tumors. Therefore it is reasonable to assume that such a phenomenon can occur even in a left atrial myxoma, as in our second case. In our first case "fine linear vessels" which Singh et al⁵ mentioned in their case report, were observed. These findings, however, have not necessarily been observed in every myxoma. Therefore, there are still some problems in distinguishing between the two conditions by coronary angiography. In our first case, there was rich tumor blush, and histological examination revealed abundant vascularity. On the other hand, our second case showed less tumor blush, and histology revealed characteristic findings of

myxoma with only minor vascularity. Considering these two cases and others, selective coronary arteriography can be useful in characterizing intracardiac tumors. In addition, tumor vascularity may not be a rare finding if selective coronary arteriography is performed more frequently on appropriate patients.

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