Heart Murmurs and Arcuate Cardiac Calcification

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This 54-year-old woman complained of presternal pain and edema of the lower extremities. There was clinical evidence of mitral valve disease and functional tricuspid valve insufficiency.

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Diagnosis: Calcification of the Left Atrium

Figure 1 shows symmetrical enlargement of the heart, marked elevation of the left main bronchus, and an arcuate calcification outlining an enlarged left atrium. The lateral view (Fig 2) confirms the location of the calcification and shows displacement of the barium-filled esophagus by the enlarged left atrium.

According to Young and Schwedel,1 calcification of the left atrium occurs in about 1 to 2 percent of cases of valvular rheumatic heart disease. Actually, the incidence is far higher, as shown by the increased number of cases reported since the introduction of high kilovoltage roentgen technique, fluoroscopy with image intensification and cine- roentgenography.

Left atrial calcification results from rheumatic involvement of the atrial myocardium. The calcification involves both the endocardium and subendocardium. Usually, the mitral valve is also calcified, and there may be calcification of left atrial thrombus as well.

The left atrial calcification appears as an annular or arcuate calcareous rim about 1 mm thick.2 The calcium lies within the cardiac shadow in all views, although it approaches a marginal position in the lateral projection. It is always separated from the lung by a 1 to 2 mm shadow paralleling the calcium, which represents the thickness of the uncalcified portion of the atrial wall and the pericardium.

Differential diagnosis includes any linear calcification projected over the heart arising in pericardium, valve, thrombus, aneurysm, myocardium, vessel, lymph node, tumor, cyst or rib. Pericardial calcification often appears on the diaphragmatic surface of the heart, in an interventricular groove or at the cardiac apex, whereas atrial calcification is located higher and more posteriorly. Calcification in a tumor, lymph node, cyst or ribs can be projected off the heart by appropriate rotation of the patient. Valvular calcifications are more mobile at fluoroscopy. Coronary artery calcification often appears as thin, parallel lines, whereas atrial calcification presents as a single thicker line. Differential diagnosis between atrial calcification and calcified atrial myxoma is not possible by the roentgen appearance alone. It is founded upon the inconstant auscultatory signs of mitral stenosis which, in the case of atrial myxoma, disappear in certain positions of the body. Clinical evidence of rheumatic heart disease is, of course, extremely helpful in establishing the diagnosis.

Left atrial calcification is not merely of academic interest, but also has practical significance, since its presence is a contributing factor to the surgical hazards of commissurotomy.

References

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