Nonprolapsing Left Atrial Tumor*

The M-Mode Echocardiographic Diagnosis

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We report the echocardiographic features of a patient with a nonprolapsing left atrial tumor. By using proper gain or reject, left atrial echoes due to tumor can be differentiated from recording artifact produced by improper technique.

The M-mode echocardiogram has been shown to be very useful in the diagnosis of a left atrial tumor which prolapses across the mitral valve during diastole.1,2 However, a nonprolapsing tumor in the left atrium may pose a diagnostic problem.3 We describe the M-mode echocardiographic features of such a case and discuss their differentiation from recording artifact.

CASE REPORT

A 66-year-old white woman complained of fatigue and weight loss in January 1976 and was discovered to have acute myelomonocytic leukemia. The only positive cardiac finding was a grade 2/6 short midsystolic murmur at the lower left sternal border and apex. The ECG demonstrated minor nonspecific ST-T wave changes. A calcified mass was noted in the area of the left atrium on chest x-ray film (Fig 1), and fluoroscopic examination revealed that the mass moved with the cardiac motion. The echocardiogram revealed dense echoes in the left atrium (Fig 2). Due to the poor prognosis and lack of cardiac symptoms, cardiac catheterization was not performed. The patient received several courses of chemotherapy and died from sepsis on Aug 11, 1977. Post-mortem examination was not done.

DISCUSSION

The M-mode echocardiographic findings of a left atrial tumor which prolapses across the mitral valve during diastole typically show multiple tumor echoes posterior to the anterior mitral valve leaflet during the latter two-thirds to three-fourths of diastole.1,3 This characteristic finding will not be seen if the tumor remains in the left atrium during diastole.4 It has been stated that the interpretation of echoes within the left atrium must be cautious because extra echoes within the left atrium are commonly recorded in patients in whom

Figure 1. Lateral chest x-ray film. Calcified mass is seen in vicinity of left atrium (arrow).

Figure 2. A, Echocardiogram of nonprolapsing tumor at level of aorta and left atrium. Small echo-free space is seen between posterior aortic wall and leading edge of left atrial tumor. Dense tumor echoes fill left atrium throughout cardiac cycle (white arrow); (AAW indicates anterior aortic wall; and PAW, posterior aortic wall). B, At level of left ventricular outflow tract, gain has been turned down but strong echo from tumor edge remains (white arrow). C, No tumor echoes are seen behind the anterior mitral valve leaflet (AMV) (EN indicates endocardium).
no atrial clots or tumor are found. Conversely, the M-mode echocardiogram may fail to detect a small nonprolapsing left atrial tumor. The two-dimensional echocardiogram has been shown to facilitate the diagnosis of intracardiac tumor and clots, however, it may not be available in many hospitals.

In the present case, the exact nature of the mass is unknown since pathologic study was not available, but fluoroscopic examination of the chest clearly demonstrated that the mass was intracardiac. The M-mode echocardiogram revealed dense echoes in the left atrium throughout the cardiac cycle, but no tumor echoes were seen behind the anterior mitral leaflet in diastole. Fluttering of the anterior mitral leaflet previously reported in a patient with nonprolapsing left atrial tumor was absent in the present case. There was a distinct gap between the posterior aortic wall and anterior edge of the tumor. The dense echo which was recorded from the leading edge of the tumor remained at a lower gain setting. These findings are quite different from the recording artifact due to high gain setting which fills the entire left atrial chamber and disappears completely with proper gain setting (Fig 3). Thus, by varying the gain, recording artifact can be differentiated from a nonprolapsing left atrial tumor.

It should be stated that the identification of the left atrial mass in the present case was facilitated by its large size and calcification. Diagnosis of a smaller mass without calcification is more difficult. The factors influencing the echocardiographic detection of intracardiac masses have been the subject of recent investigation.

It is concluded that the M-mode echocardiogram is useful in the detection of a nonprolapsing left atrial tumor, and recording artifact can be differentiated by proper technique.

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REFERENCES
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