A Case of Acute Rheumatic Fever:
Echocardiographic Findings for Mitral Regurgitation in Acute Rheumatic Carditis

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An eight-year-old girl with mitral regurgitation in acute rheumatic fever was examined by echocardiography. The examination showed posterior displacement of the coaptation point of the anterior mitral leaflet, i.e. anterior mitral prolapse, and did not indicate signs of edematous change or verrucous fibrin deposits on the valves. Mitral valve prolapse is thought to be one of the causes of mitral regurgitation in acute rheumatic carditis.

The incidence of rheumatic fever has declined strikingly in Japan, the United States and Europe for the past several decades. Acute rheumatic carditis is now uncommon in these areas. Therefore, while echocardiography has taken an important place recently in the diagnosis of cardiac disease, few reports of echocardiographic findings for acute rheumatic carditis are found. In this case report we describe mainly the echocardiographic findings for acute rheumatic carditis.

CASE REPORT

This case was an eight-year-old female. Her family and past history revealed nothing of significance. She complained of a sore throat on Dec. 11th, 1984 and was treated with antibiotics for acute tonsillitis by a general practitioner. She became well soon thereafter. General malaise appeared on Dec. 25th, a slight fever, headache and nausea on Dec. 28th, and she was admitted to Shimane Central Hospital on Dec. 31st because these symptoms had been continuing. She had no abnormal physical findings apart from swelling of the tonsils. She was treated with Amoxicillin for a fever of unknown origin. Laboratory findings were as follows: Wbc, 12100; ESR, 89; CRP, 5+; ASO, 2048x. Hemolytic streptococcal infection was suggested. The fever continued until Jan. 9th, 1985 and an apical cardiac murmur was first noticed on Jan. 16th. She was treated with prednisone on Jan. 18th, starting with a dose of 40 mg/24 hr, because her condition was diagnosed as acute rheumatic fever with carditis. She was referred to the Hospital of Shimane Medical University on Jan. 29th, for evaluation of rheumatic carditis.

On physical examination, her general condition was good and stature and nutrition were within the normal range. The third cardiac sound was clearly audible and a grade 3/6 pansystolic harsh murmur and 1/6 short middiastolic rumble following the third sound were at apex.

The chest roentgenogram showed normal cardiac shadow and pulmonary vascular markings. In the electrocardiogram, the PQ interval was prolonged on Jan. 16th but normalized on Jan. 30th. Echocardiography suggested anterior mitral prolapse, because of posterior displacement of the coaptation point of the anterior leaf.

Key words:
Acute rheumatic fever
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Fig. 1. Left: M-mode echocardiogram of mitral valve shows systolic backling. Right: two
dimensional echocardiogram shows anterior mitral prolapse.
LV = left ventricle; Ao = aorta; AMV = anterior mitral valve; LA = left atrium

Fig. 2. Doppler echocardiogram shows systolic turbulent away flow in left atrium (LA),
i.e., mitral regurgitation.
LV = left ventricle; Ao = aorta; SV = sample volume

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let. However, neither increasing echo density nor thickening of the mitral leaflet were detected. Pulsed Doppler echocardiography revealed mitral regurgitation. Systolic turbulent flow was detected behind the coaptation of the two leaflets in the left atrium and spread into the small area along the posterior wall of the left atrium.

The grade of apical systolic murmur had decreased from 3/6 to 2/6 ten weeks after starting steroid therapy and is 1/6 now. Diastolic murmur disappeared three weeks after it started.

On Apr. 15th, cardiac catheterization was done. Pressures and oxygen saturation of the chambers, great vessels and veins were within normal range. Endomyocardial biopsy was performed and Aschoff body could not be found. Left ventriculography revealed a grade 1～2 Sellers mitral regurgitation, but left atrium and left ventricle were not enlarged.

**DISCUSSION**

Rheumatic carditis is pancarditis. Mitral regurgitation is caused by endocarditis, which leads to the destruction, thickening, and shortening of the valve and subvalvular construction. In the acute stage valvulitis leads to verrucous fibrin deposits along the line of closure of the leaflets. Echocardiography shows enlargement of the left atrium and ventricle with an increased velocity of diastolic closure of the anterior mitral leaflet in moderate or severe regurgitation. The signs of mitral valve prolapse are usually absent. In this case, however, the posterior displacement of the coaptation point of the anterior leaflet was detected by echocardiography, so that we suspected that mitral valve prolapse was one of the causes of mitral regurgitation in rheumatic fever. Signs of edematous change and verrucous fibrin deposits on the valves were not found. If echocardiography was performed before the start of steroid therapy, some of these lesions might be detectable. Echocardiographic findings for the mitral valve before and after the diastolic murmur disappeared following steroid therapy showed no change.

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