Cardiovascular Imaging In-a-Month

● A 57-Year-Old Man Complaining of Shortness of Breath

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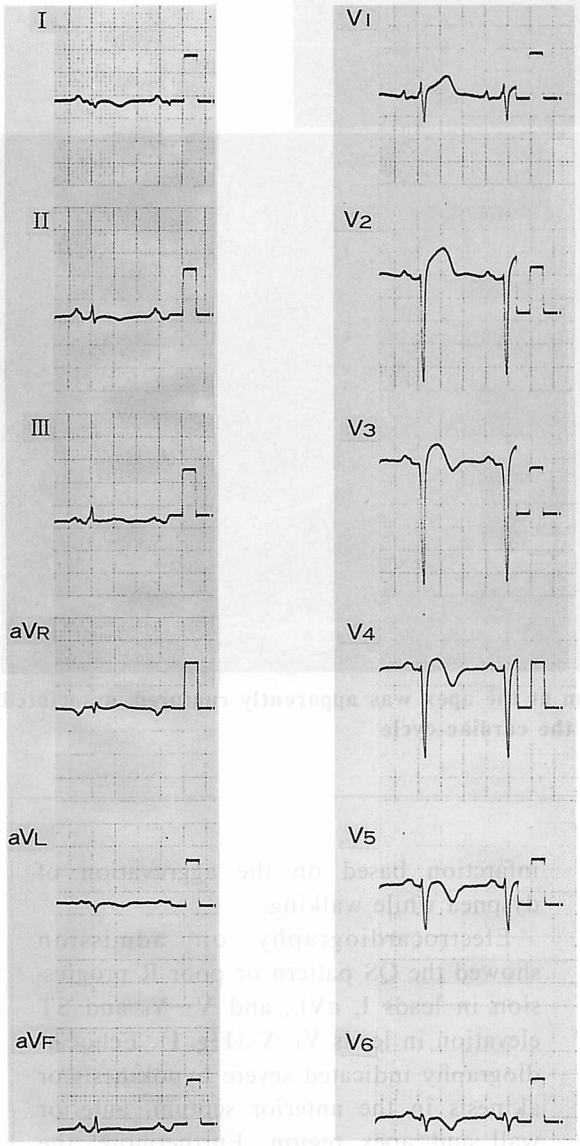

Fig. 1 Electrocardiogram on admission showing the QS pattern or poor R wave progression in leads I, aV_L, and V_2–V_6, and ST elevation in leads V_1–V_5

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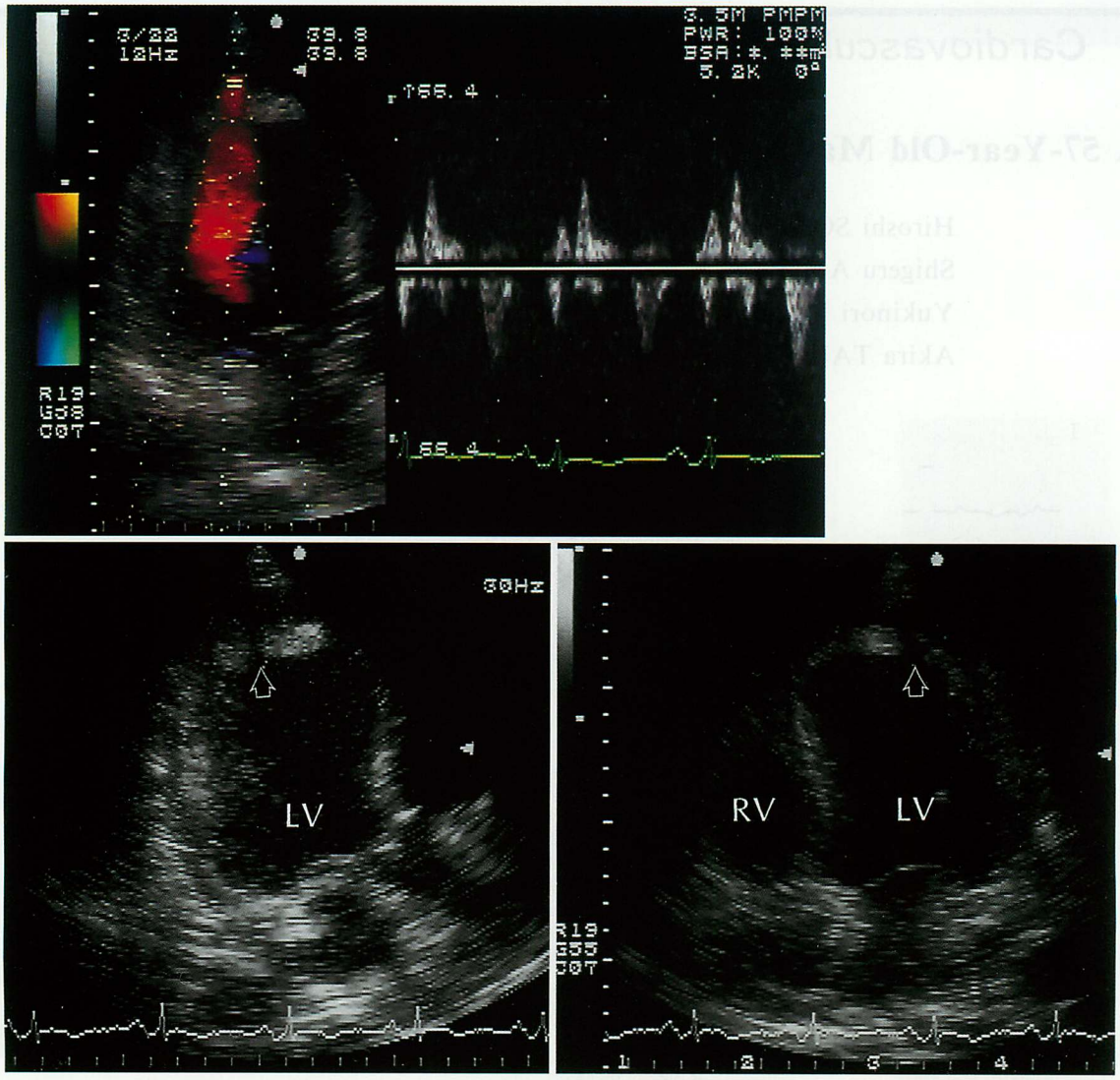

Fig. 2 Echocardiograms showing the myocardium at the apex was apparently ruptured, associated with to and fro blood flow in response to the cardiac cycle

CASE

On May 13, 1997, a 57-year-old seaman experienced a sudden chest pain while he was working on a ship. He visited a hospital in the Republic of South Africa where he was hospitalized for 15 days under a diagnosis of acute myocardial infarction. He was encouraged to walk on hospital day 2 and continued the exercises during the hospitalization. Whenever he was walking, he felt shortness of breath. He returned to Japan on June 3. He was immediately referred and admitted to our hospital under a diagnosis of anteroseptal myocardial infarction based on the aggravation of dyspnea while walking.

Electrocardiography on admission showed the QS pattern or poor R progression in leads I, aVL, and V_2–V_6 and ST elevation in leads V_1–V_5 (**Fig. 1**). Echocardiography indicated severe hypokinesis or akinesis in the anterior septum, anterior wall and apex region. Furthermore, the apical myocardium was apparently ruptured because to and fro blood flow could be seen in response to the cardiac cycle (**Fig. 2**).

Points on Diagnosis

Based on these findings, we diagnosed anteroseptal myocardial infarction associated with a pseudoaneurysm. The patient was transferred to the surgical department after treatment for heart failure on hospital day 10. Echocardiography before the operation showed these findings had disappeared (**Fig. 3**).

On June 20, coronary artery bypass grafting and patch reconstruction of the left ventricular aneurysm were performed. The apex was filled with an organized massive thrombus, which contained no myocardial tissue as shown in **Fig. 4**. The postoperative final diagnosis was true aneurysm. The preoperative echocardiographic findings were considered to have reflected the thrombus in an early stage of growth.

Echocardiography shows pseudoaneurysm as a sudden interruption of the myocardium, communication with the left ventricle, and the presence of an echo-free space with a narrow entrance, the diameter of which does not exceed a half of the largest diameter of the ventricular aneurysm[1,2] as shown in **Fig. 5**[3]. Yamaura *et al.*[4] reported that a subepicardial aneurysm as shown in **Fig. 5–C** causes a pseudoaneurysm.

In the present case, although the apical myocardium which was considered to be ruptured was not so thinned, the echo of the thrombus was as bright as that of the myocardium possibly because of organization. This finding resulted in the erroneous diagnosis of pseudo-false aneurysm (subepicardial aneurysm) on admission. The differentiation of true aneurysm from pseudoaneurysm is critical for planning therapy or determining whether emergency treatment is necessary. It should be kept in mind that these two conditions can be difficult to distinguish clinically such as in the present case.

The present case has the following clinical implications:

1) Echocardiography showed a large organized thrombus at the apex, suggesting a myocardial rupture, and the unusual course of growth of the thrombus could be clarified by serial echocardiography.

2) True aneurysm is difficult to differentiate from pseudoaneurysm if associated with a thrombus with an unusual growth pattern as in the present case. Consequently, such an aneurysm should be carefully diagnosed.

3) Qualitative diagnosis is required based on magnetic resonance imaging and enhanced computed tomography.

Diagnosis: True ventricular aneurysm

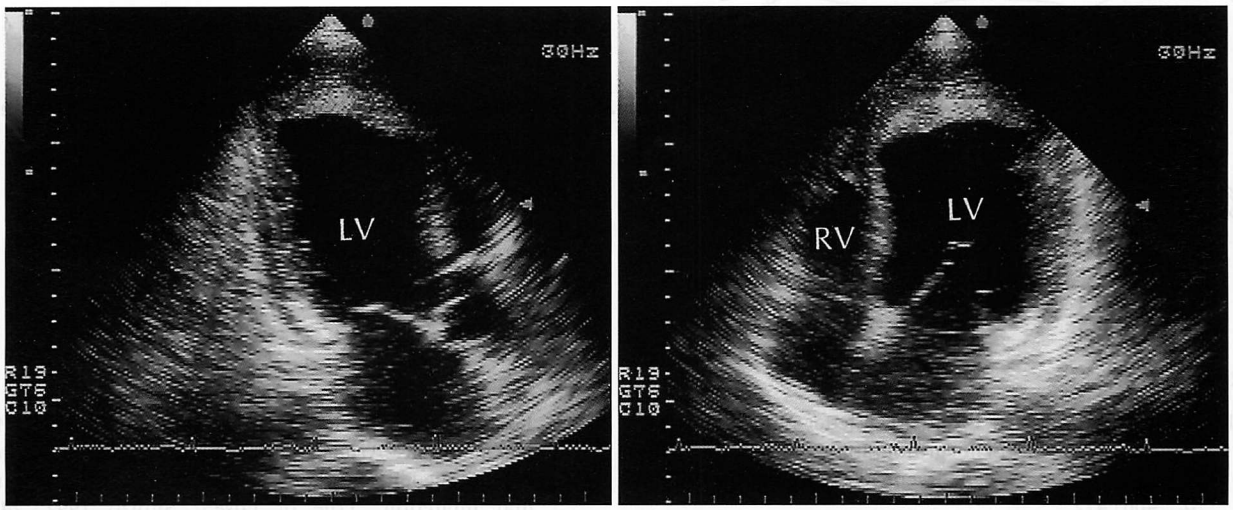

Fig. 3 Echocardiograms suggesting the ruptured myocardium at the apical lesion had disappeared before the operation

Fig. 4 Intraoperative photograph showing a large intramural thrombus at the left ventricular apical lesion

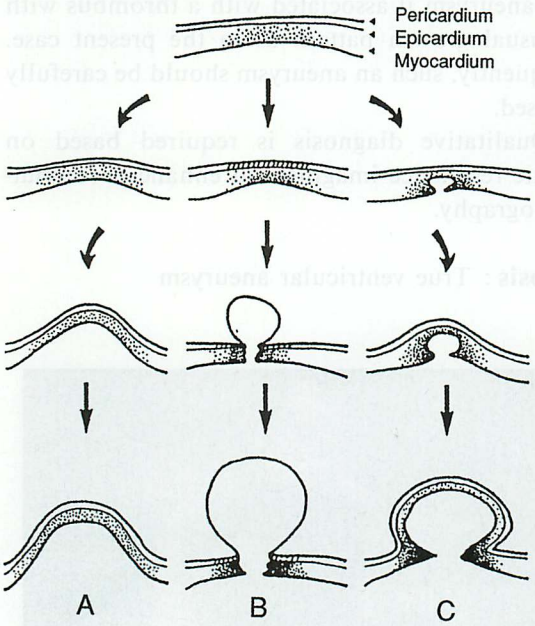

Fig. 5 Schema demonstrating the course of ventricular aneurysm formation
A : True aneurysm
B : Pseudoaneurysm
C : Pseudo-false aneurysm (subepicardial aneurysm?)
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References

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要　約

真性か偽性かの判断が難しかった心室瘤の1例

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症　例　57歳，男性，船員

現症歴：南アフリカへ渡航中，前胸部痛を自覚し，同国内の病院に前壁中隔心筋梗塞の診断にて入院．帰国後も労作時の息切れを自覚するため当院受診．心エコー図上，心尖部に心筋断裂様所見と同部での血流を認め，pseudo-false aneurysm (subepicardial aneurysm) を合併した前壁中隔梗塞と診断した．心不全の治療後第10病日に，手術目的にて外科へ転科した．

診断のポイント：術直前の心エコー図では心筋断裂所見は消失しており，第17病日に施行した心尖部心室瘤切除術所見から真性心室瘤 (true aneurysm) と判明した．したがって，術前の心エコー図所見は，血栓の特異的な成長過程をとらえたものであると判断した．

1) 心エコー図上，一見，心尖部に心筋断裂を想起させるような器質化血栓が存在し，経時的に特異な成長過程がとらえられた．

2) 真性心室瘤の中でも，本例のように特異な血栓成長過程を伴う場合は偽性心室瘤との鑑別が困難な場合があり，その診断には注意を要する．

3) MRI や強調 CT の所見を加味したうえでの質的診断が必要である．

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