SEPTAL MYOCARDIAL ABSCESS AND INFECTIOUS PERICARDITIS
IN A CASE OF BACTERIAL ENDOCARDITIS

Mikio Arita, M.D., Yoshio Kusuyama, M.D., Mikio Takatsuji, M.D.
Kohei Kawazoe, M.D.*, and Yoshiaki Masuyama, M.D.**

A case of acute aortic valve endocarditis is reported, in which the complications of pericarditis and myocardial abscess were diagnosed clinically.

Two dimensional and M-mode echocardiography showed large echo-free spaces and a marked thickening of the interventricular septum which had not been detected previously, suggesting pericardial effusion and myocardial abscess. This is the first case in Japan to our knowledge, in which the pericarditis and myocardial abscess were detected preoperatively and successfully treated surgically.

Pericarditis and myocardial abscesses are unusual and serious complications of bacterial endocarditis.1,2 These complications are difficult to detect clinically and are usually discovered during autopsy. In this study, we describe dimensional and M-mode echocardiographic features of myocardial abscess and pericarditis which were found in a case of endocarditis.

CASE REPORT
A 43-year-old man was admitted to Wakayama National Hospital with fever and shaking chills of six weeks' duration. He came to our hospital 4 weeks before admission. The blood pressure was 120/60 mmHg, the pulse was 84 beats per minute and regular, the temperature was 38.5°C, and the grade II systolic murmur, was heard in the aortic area. An electrocardiogram showed the sinus rhythm, left ventricular hypertrophy, and no ST depression. The cardiac silhouette appeared normal on the chest X-ray film. An echocardiogram revealed a thickened aortic leaflet and diastolic fluttering of the mitral valve leaflet. There was no echo-free space and no thickening of the interventricular septum. The patient was advised to enter the hospital for further evaluation, but he did not comply with our recommendation.

As a result, four weeks later, he was admitted to the hospital with cough, fever, and chills. On examination, he had blood pressure of 120/60 mmHg, regular pulse of 90 per minute, temperature of 39.2°C and grade III diastolic and systolic murmur in the aortic area. There was hepatomegaly of three finger breadths and no peripheral edema. The white blood cell count was 10300/mm³ with the shift to the left; the erythrocyte sedimentation rate was 57 mm in one hour; C-reactive protein was 3+; and viral antibody titers were all normal. An electrocardiogram showed supraventricular premature beats and mild ST elevation. A chest X-ray film showed cardiomegaly with congestive changes, and the cardiothoracic ratio was 69%. Echocardiogram demonstrated large anterior and posterior peri-

Key Words:
Myocardial abscess
Pericarditis
Echocardiography

(Received October 12, 1984; accepted February 14, 1985)
The Division of Cardiology, Wakayama National Hospital, and **Wakayama Medical College, Wakayama, and
*The Department of Cardiovascular Surgery, National Cardiovascular Center, Osaka, Japan
Mailing address: Mikio Arita, M.D., Division of Cardiology, Department of Medicine, Wakayama Medical
College, 1, 7-Bancho, Wakayama 640, Japan

Japanese Circulation Journal Vol. 49, April 1985 451
Fig. 1. M-mode scan showed a dilated aortic root and vegetation on the aortic valve, and posterior pericardial effusion. There were some extra echoes between the aortic valve and the anterior wall of the aorta.
Abbreviations: Ao = aorta; LA = left atrium; LV = left ventricle; PE = pericardial effusion.

Fig. 2. M-mode echocardiogram demonstrated a marked thickening of the interventricular septum (arrow) at the level of left ventricular outflow tract.

cardial effusions and multiple echoes from the aortic valve leaflets, but did not reveal “shaggy” echoes of aortic valves. Blood cultures yielded streptococcus viridans. Though treatment with digitalis, diuretics and penicillin was begun, subsequent M-mode echocardiogram demonstrated “shaggy” echoes of the aortic valve, a dilated aortic root, and double echo of the anterior and posterior aortic wall. There was a marked thickening of the interventricular septum in the region of the mitral annulus and valve with some decrease in echoes from the mid-portion of the septum, suggesting abscess formation (Fig. 1, 2). Fine fluttering of the mitral valve leaflet could also be noted, which indicated aortic insufficiency. Two dimensional echocardiogram showed marked ventricular septal thickening and a dense mass in the area of the aortic valve,

*Japanese Circulation Journal Vol. 49, April 1985*
annulus, as well as posterior pericardial effusion (Fig. 3). Pericardial echo-free space decreased, and the distance between the epicardial and pericardial echoes could be noted to indicate the thickness of pericardium. On the 15th hospital day, systemic emboli occurred and the fever up to 39.2°C persisted. The patient was transferred to the National Cardiovascular Center for cardiac surgery, and operation was performed 4 days later.

At the time of operation, the pericardial sac was thickened but did not contain any pericardial fluid. There was fibrinous adhesion between the pericardium and epicardium. Histologically, tremendous proliferation of bacteria, probably diplococci, was revealed by Giemsa stain in the fibrinous deposit on the pericardium. The pericardium itself showed fibrinous thickening with formation of inflammatory granulation where moderate infiltration of inflammatory cells, mainly mononuclear cells and focal deposit of hemosiderin were observed (Fig. 4). The aortic valve was edematous, with vegetation on the left- and non-coronary cusps. The affected area had the appearance of pigeon-egg sized mycotic aneurysm of the right sinus of Valsalva. Mycotic aneurysm extended into the interventricular septum and caused myocardial abscesses. The aortic valve was replaced with #23 Björk-Shiley prosthesis. The debridement of mycotic aneurysm's content, which was organized from necrotic and infected tissues, was performed and the septum was closed with a Dacron patch. At this writing, 2 years after operation, the patient is well.

DISCUSSION

Before antibiotics, marked complications developed in bacterial endocarditis, e.g., sinus of Valsalva mycotic aneurysm and fistulous connections, or perforation of the ventricular septum
with development of left to right intracardiac shunts. To some extent, these remarkable complications have been reduced in recent years.

Pericarditis is an unusual clinical manifestation of bacterial endocarditis, despite a prevalence of 13.2% noted in autopsy series. Pericardial inflammation is usually the result of either metastatic seeding or contiguous spread of infection. The presence of pericarditis should raise the suspicion of myocardial abscess. Myocardial abscess has been found at autopsy in about 20% of patients with endocarditis and in a small percentage with bacteremia. The diagnosis of myocardial abscess or purulent pericarditis has lethal prognostic implications.

With an increase in the use of echocardiography, pericarditis and myocardial abscess which are very rare complications of bacterial endocarditis, can be easily diagnosed. In our patient, echocardiography demonstrated extremely thick interventricular septum and large pericardial effusions, which suggested myocardial abscess and pericarditis. Pericarditis has been described in association with myocardial abscesses in the area of valve rings, and in association with mycotic aneurysms. Incarvito et al reported echocardiographic findings of mycotic aneurysm of the sinus of Valsalva complicated endocarditis, which exhibited (1) a dilated aortic root; (2) an echo-free space with anterior aortic root; (3) the definite anterior bowing of the anterior aortic root into the right ventricle. In this case, M-mode scan demonstrated a dilated aortic root and a thickening of the interventricular septum at the level of the left ventricular outflow tract. There were some extra echoes between the aortic valve and the anterior wall of the aorta. These findings also suggested abscess formation and a sinus of Valsalva aneurysm.

In our case, serious complications of infectious endocarditis, such as pericarditis and myocardial abscess, were detected with echocardiography. Though this case anticipated a fatal outcome, early diagnosis and prompt surgical intervention proved successful.
Myocardial Abscess and Pericarditis in Endocarditis

Acknowledgement

We wish to thank Dr. Haruhiko Sakamoto and Mr. G.C. Sala for their valuable advice in this case.

REFERENCES

4. MILDVAN D, GOLDBERG E, BERGER M,

5. BECK D: Pericarditis and subacute bacterial endocarditis. J Mount Sinai Hosp NY 8: 364, 1942