Case Reports

Pericardial Abscess Detected by Gallium-67 Scintigraphy 40 Years After Cardiac Surgery

Wataru MITSUMA,1 MD, Masahiro ITO,1 MD, Satoru FUJITA,1 MD, Keiichi TSUCHIDA,1 MD, Masashi TAKAHASHI,2 MD, Junichi HAYASHI,2 MD, Makoto KODAMA,1 MD, and Yoshifusa AIZAWA,1 MD

SUMMARY
A 45-year-old female who had cardiac surgery 40 years earlier was transferred to our hospital because of refractory fever. Echocardiography showed an intrapericardial mass. Gallium-67 (⁶⁷Ga) scintigraphy revealed abnormal accumulation at the same site of the intrapericardial mass and thoracoscopy revealed that the mass was a pericardial abscess (PA). After surgical resection, drainage and antibiotic therapy, her fever subsided and the abnormal accumulation of ⁶⁷Ga disappeared. This case showed a very rare clinical course of PA and the importance of ⁶⁷Ga scintigraphy for its diagnosis. (Int Heart J 2005; 46:1119-1122)

Key words: Pericardial abscess, Gallium-67 scintigraphy, Thoracoscopy

Pericardial abscess (PA) is a rare but life-threatening condition which is most often a result of the spread of a contiguous pulmonary, intracardiac, or chest wall infection. We encountered an atypical clinical form of PA with refractory fever in a patient who underwent cardiac surgery 40 years earlier. Gallium-67 (⁶⁷Ga) scintigraphy was useful for the diagnosis and evaluation of the therapeutic effects of PA in this case.

CASE REPORT
A 45-year-old female was transferred to our hospital because of recurrent high grade fever. Prior to transfer, she had been hospitalized and treated with intravenous antibiotics for 4 weeks. However, her condition showed no improvement. She had undergone surgical repair of an incomplete endocardial cushion defect (ECD) 40 years prior to admission, and her postoperative course had been uneventful. Her blood pressure on admission was 104/64 mmHg, and her body...
temperature was 37.4°C. An electrocardiogram revealed atrial flutter. Laboratory data were normal except for a rheumatoid factor of 17.2 IU/mL and a slight increase of C-reactive protein (CRP) (0.4 mg/dL). Blood cultures were negative during the clinical course. Her chest X-ray film showed cardiomegaly without pulmonary edema. A transesophageal echocardiogram demonstrated mild discrete subaortic stenosis with a systolic gradient of 20 mmHg at the left ventricular outflow tract (LVOT) and an isoechoic solid mass at the back of the left ventricle. Both magnetic resonance imaging (MRI) and computed tomography (CT) confirmed the presence of an intrapericardial mass of $3.5 \times 2.5 \times 2.0$ cm. The mass showed heterogeneous density and its border was unclear with signs of calcification, which was believed to have developed postoperatively (Figure 1).

$^{67}$Ga scintigraphy revealed abnormal accumulation at the site of the intrapericardial mass (Figure 2) and suggested a tumor or an abscess. Intravenous antibiotic therapy was resumed and the accumulation of $^{67}$Ga decreased in accordance with a subsidence of fever and CRP. Therefore, the intrapericardial mass was believed to be related to the high grade fever. Thoracoscopy showed an abscess in the intrapericardium, and the abscess was removed as much as possible and drained surgically. Histological examination revealed fibrous connective tissue with chronic inflammatory tissue, and no tumor tissues. *Alcaligenes fecalis* was cultured from pericardial pus. After the surgery, the cavity of the abscess was irrigated and intravenous antibiotic therapy was continued for 2 weeks. The postoperative course of the patient was uneventful. Her fever and CRP normalized

![Figure 1. Computed tomography (CT). The mass (3.5 x 2.5 x 2.0 cm, white arrow) was detected between the caudal atrioventricular groove and atriums. RA indicates right atrium; LA, left atrium; and LV, left ventricle.](image)
DISCUSSION

PA is a very rare disease with a high mortality and it is difficult to make a precise diagnosis.\textsuperscript{1-3} Recently, imaging techniques such as CT and MRI have

and subsequent \textsuperscript{67}Ga scintigraphy demonstrated no abnormal accumulation. She was discharged and has been free of any further symptoms.

Figure 2. A: Gallium (Ga) scintigraphy with high grade fever and C-reactive protein level of 4.1 mg/dL. Abnormal accumulation was detected at the same site of the intrapericardial mass (black arrow).

B: Ga scintigraphy during the period of normalization of both fever and C-reactive protein.
been improved, but it is still difficult to diagnose the nature of pericardial mass lesions. In the present case, infective endocarditis was initially suspected as the origin of the fever because a discrete mass and subaortic stenosis were demonstrated by echocardiography. Although both CT and MRI revealed the existence of an intrapericardial mass, it was not possible to determine whether the mass was the etiology of her fever. From this point of view, \textsuperscript{67}Ga scintigraphy was very useful not only in making the diagnosis of the inflammatory disease but also to evaluate the therapeutic effects of PA in this case. The vegetative-like fibrous structure of LVOT remained unchanged during her clinical course.

Generally, PA develops from purulent pericarditis, however, the pericardium is a rare primary site of infection. Abscesses spreading to the pericardium generally occur via one of the following five routes: (1) direct extension from a pulmonary, pleural or mediastinal focus of infection, (2) hematogenous spreading, (3) contiguous spreading from a cardiac infection (myocardial abscess, endocarditis), (4) extension from a subdiaphragmatic suppurative lesion, or (5) perforated injury of the chest wall or esophagus (trauma, surgery). In this case, there was no history of chest trauma, sepsis, liver abscess, or esophageal fistula. These findings allowed us to presume that PA in this case was related to the chest surgery performed 40 years previously. Scar tissue might become an infectious site after accidental bacteremia and the infection may progress very slowly and mildly due to adhesion, resulting in encapsulation. \textit{Alcaligenes fexalis} is a gram negative rod which can be isolated from several materials such as urine, blood, and sputum. To our knowledge, this is the first report of a PA caused by \textit{Alcaligenes fexalis}.

\textbf{Conclusions:} In summary, this patient had an atypical form of PA 40 years after cardiac surgery. \textsuperscript{67}Ga scintigraphy was useful in the diagnosis and evaluation of the therapeutic effects of PA.

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