Case report

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Behçet's disease associated with aortic and mitral regurgitation: Report of two cases

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Summary

Two rare cases of complicating valvular lesions in Behçet's disease are reported.

Case 1: A 45-year-old man with combined aortic and mitral regurgitation had perforation of both valves. Six months after aortic valve replacement (AVR) and mitral valvuloplasty, an aortic paravalvular leak developed again, and was treated by surgery using an artificial graft with a prosthetic aortic valve.

Case 2: A 40-year-old man with congestive heart failure and inflammatory signs had aortic and mitral regurgitation. Although cardiac medications for heart failure and treatment with methylpredonisolon were started, he eventually had successful aortic valve replacement.

Valvular disease complicating Behçet's disease is rare; only 15 cases, including our two, have so far been reported. Its rarity is partly because Behçet's disease predominantly involves the venous system, not the arterial system.

Key words

Behçet's disease Aortic regurgitation Mitral regurgitation

Introduction

Behçet's disease is a systemic disease with lesions involving multiple organs. However, cardiac lesions such as pericarditis, myocarditis, conduction disturbances and valvular incompetence have rarely been reported in this disease. Two rare cases of Behçet's disease with combined aortic and mitral regurgitation are reported in this paper.

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Case reports

Case 1

A 45-year-old man was admitted to our hospital in May, 1983 with a chief complaint of dyspnea on exertion. He had a history of recurrent oral aphtha, genital ulceration and acne-like skin lesions. Combined mitral and aortic regurgitation was diagnosed prior to admission, and the onset of heart murmurs was suspected recently. There was no family history of cardiac disease.

Physical examination on admission revealed a fairly well-nourished, well-developed man. His body temperature was 36.8°C. His blood pressure was 110/0 mmHg and his pulse was 100 beats/min. There was no evidence of iritis or posterior uveitis. Large, shallow ulcerations involved the superior surface of his tongue, but no genital ulcerations were observed. On auscultation, there was a grade 2/6 pansystolic murmur at the apex and a grade 2/6 diastolic regurgitant murmur along the left sternal border.

Laboratory studies revealed a red blood cell count of $341 \times 10^4/mm^2$, a hemoglobin of 10.1 g/d*l*, a hematocrit of 31.2%, and a white blood cell count of $7400/mm^2$. The erythrocyte sedimentation rate was 23 mm/hr, and urinalysis revealed no abnormalities. Slight elevations of GOT (52 IU/*l*), LDH (1569 IU/*l*), and total bilirubin (1.9 mg/d*l*) were noted. The chest radiograph showed moderate cardiomegaly with slight pulmonary passive congestion (**Fig. 1**). His electrocardiogram revealed a normal sinus rhythm, left axis deviation, and high QRS voltage in the left precordial leads, with no ST-T changes (**Fig. 1**). Aortography confirmed the diagnoses of aortic regurgitation (III°) and mitral regurgitation (II°). Two-dimensional echocardiography showed markedly enlarged left ventricular and left atrial chambers with mild, diffuse impairment of myocardial contractility. The mitral valve leaflets' motion was abnormal, with fluttering in diastole. There was an oval-shaped structure protruding from the central portion of the anterior leaflet of the mitral

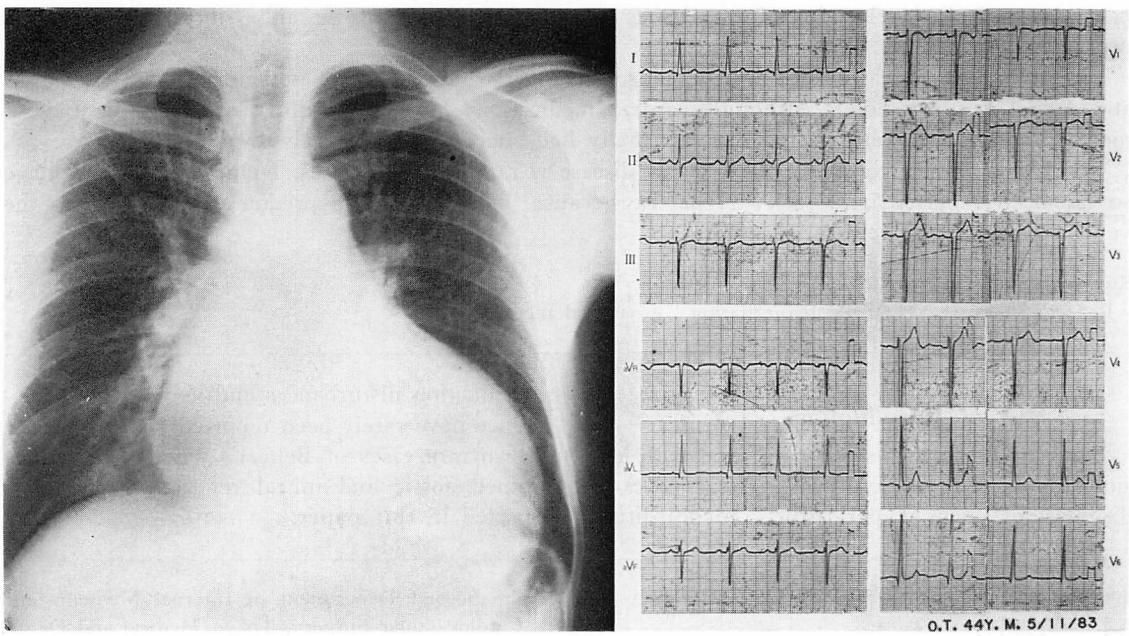

Fig. 1. Chest radiograph (left) **and a 12-lead electrocardiogram** (right) **on admission** (Case 1).
Moderate cardiomegaly and high QRS voltage without ST-T changes are observed.

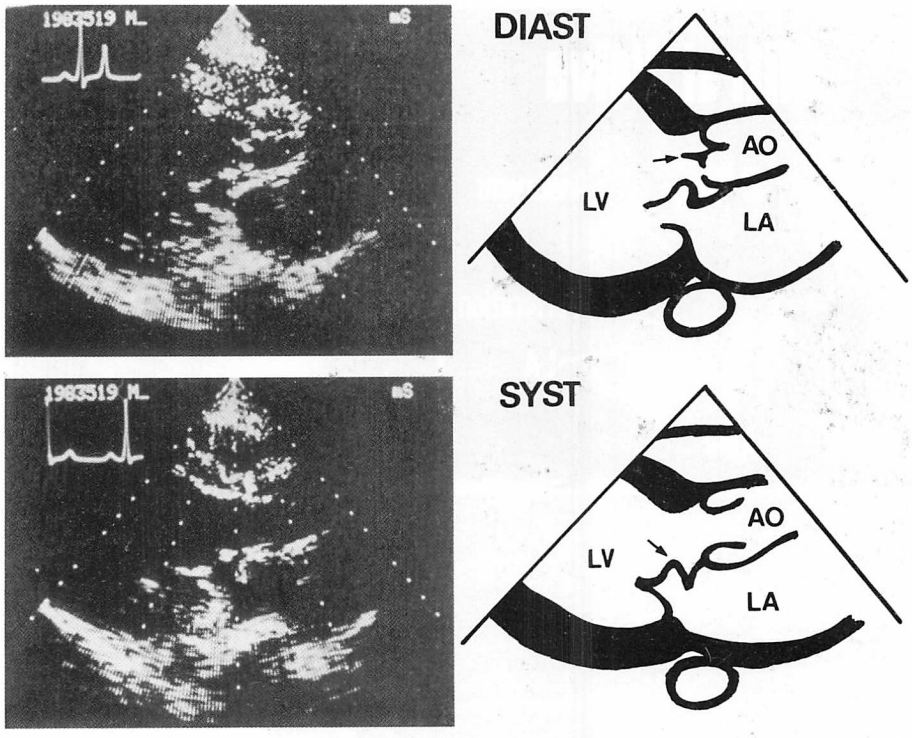

Fig. 2. Parasternal long-axis views of two-dimensional echocardiograms (Case 1).
Aortic valve perforation of the non-coronary cusp as well as anterior mitral valve perforation with mitral aneurysmal formation (arrow) are suspected.

valve. A string-like structure, a part of the non-coronary aortic cusp, prolapsed towards the left ventricular outflow tract in diastole (**Fig. 2**).

The patient's aortic valve was replaced (AVR) with a Björk-Shiley prosthetic valve and mitral valve plasty was performed. On direct observation during open heart surgery, the mitral valve was thickened and deformed, with a perforation at the top of a valvular aneurysm on the anterior mitral valve leaflet (**Fig. 3A**). The aortic valve specimens which were removed surgically revealed a large perforation in the thickened non-coronary cusp, and focal thickening with deformities in the right and left coronary cusps (**Fig. 3B**). Microscopic examination of the aortic valve leaflets showed fibrous thickening of the layers of the intima and media, and destruction of the internal elastic lamina (**Fig. 3C**). The resected tissues from the aortic and mitral valves were cultured and found to be negative for infection.

The patient was in good condition while receiving 20 mg/day prednisolone, until a diastolic murmur (grade 2/6) appeared six months after the initial surgery. The subsequent echocardiography and pulsed Doppler echocardiography revealed the artificial valve ring to be partially detached from the aortic wall with consequent paravalvular leakage (**Fig. 4**).

Partial detachment of the aortic valve prosthesis was confirmed during the subsequent operation. An AVR using a graft-valve prosthesis was repeatedly performed for the prosthetic valve dehiscence. The patient has been well since that surgery.

Case 2

A 40-year-old man was admitted to the hospital in May, 1985, with dyspnea, edema and

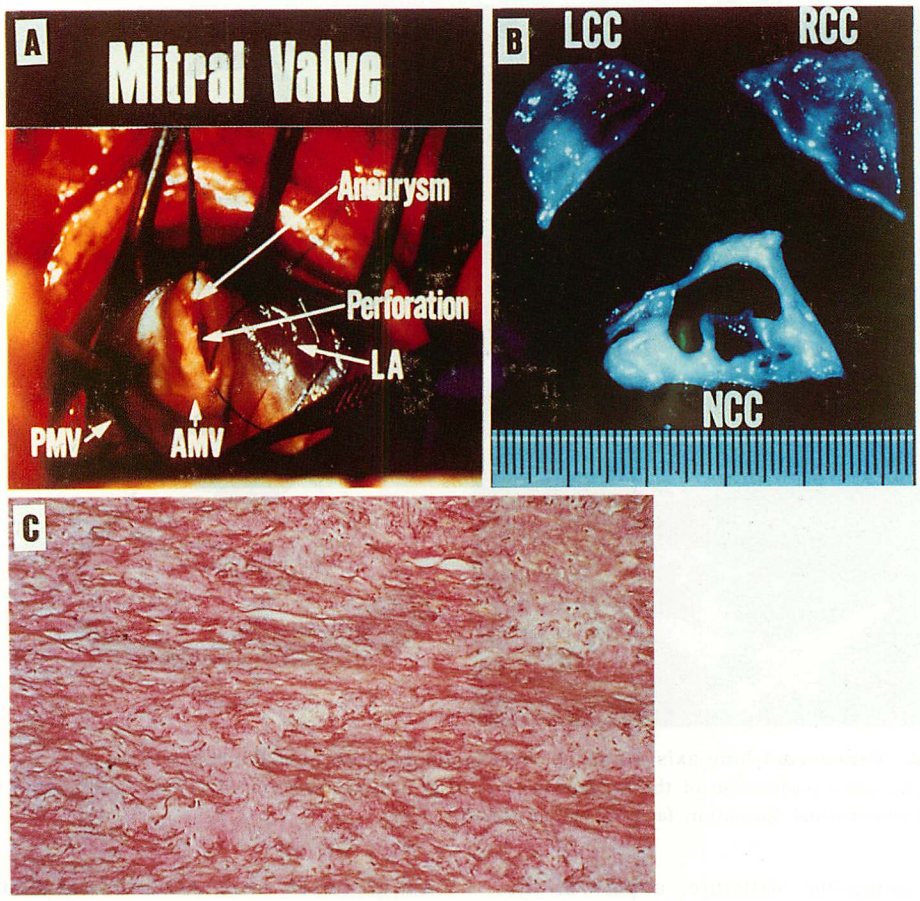

Fig. 3. Pathological findings of Case 1.

Operative findings revealed an anterior mitral valve perforation (A) and an aortic valve perforation (B). Microscopic findings of the aortic valve cusp show fibrous thickening of both layers of the intima and media, and destruction of the internal lamina (C).

proteinuria. He had been repeatedly referred for oral and genital ulcers, arthritis and skin eruptions. He had no significant family history of cardiovascular diseases. On admission, his blood pressure was 170/60 mmHg, pulse 98/min, and his body temperature was 36.1°C. No abnormalities such as iritis or chorioretinitis were observed. Aphthous ulcerations were present at the tip of his tongue and oral cavity wall. Acne-like and pustular lesions were observed on the skin of his face, shoulders and chest. There were no lesions in his genital area. He had a gallop rhythm, and a grade 2/6 systolic regurgitant murmur at the apex and a grade 2/6 diastolic murmur along the left sternal border were noted. Moist rales were audible over both lower lung fields. There was mild edema of his pretibial regions, bilaterally. Results of laboratory studies showed that his red blood cell count of $402 \times 10^4/mm^2$, a hemoglobin of 10.7 g/d*l*, a hematocrit of 31.5% and a white blood cell count of $7100/mm^2$. Urinalysis revealed a pH of 6, 2+protein, and 2+ occult blood. The erythrocyte sedimentation rate was 33 mm/hr, and C reactive protein was 3+. Serum total protein was 6.8 g/d*l* and his γ-globulin

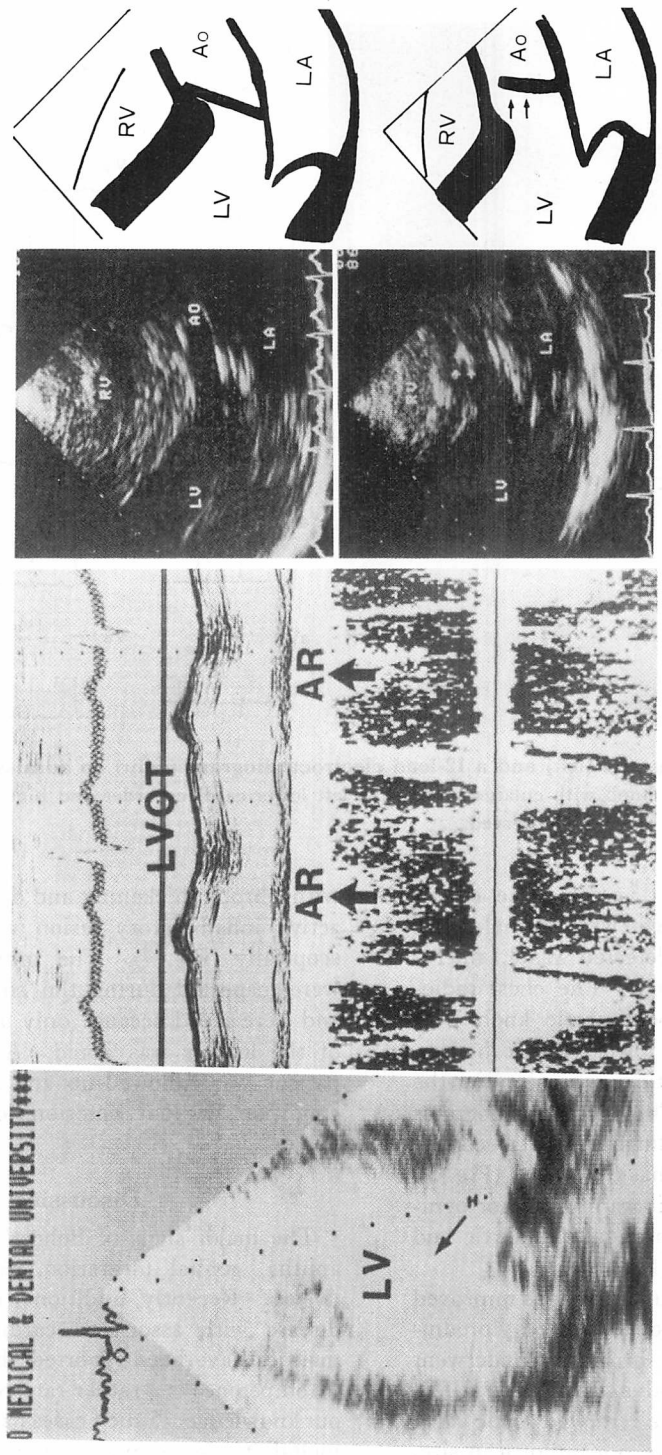

Fig. 4. Echocardiograms of Case 1 six months after the initial surgery.
Doppler echocardiographic study performed six months after aortic valve replacement and mitral valvuloplasty indicates aortic paravalvular leakage with prosthetic valve dehiscence.

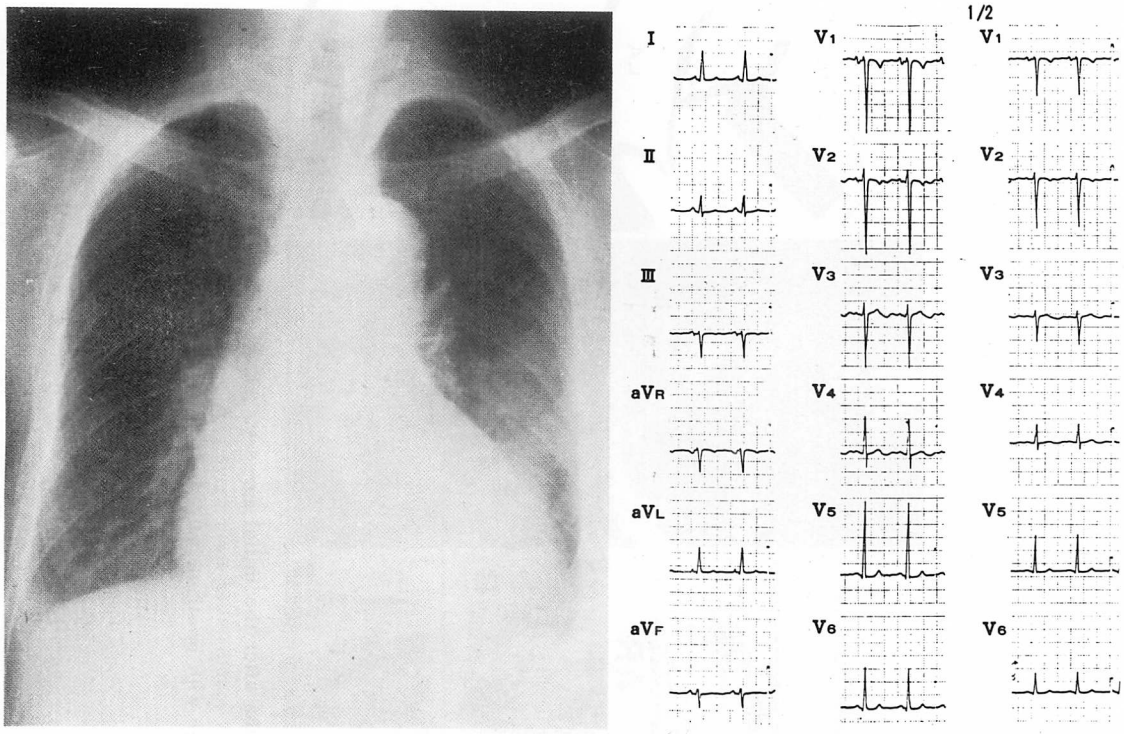

Fig. 5. Chest radiograph (left) **and a 12-lead electrocardiogram** (right) **on admission** (Case 2).
A prominent aortic knob with enlargement of the left lower cardiac border and high QRS voltage in the left precordial leads are observed.

was elevated to 19.8% (1.3 g/d*l*). The creatinine and blood urea nitrogen were normal. The serum immune complex detected was 3.1 microgram/m*l* by the C_{1q} method. The chest radiograph revealed a prominent aortic knob with enlargement of the left lower cardiac border. Mild pulmonary congestion was seen in the lung fields (**Fig. 5**). The electrocardiograms showed a high QRS voltage in the precordial leads with wide and biphasic P waves (**Fig. 5**). Pulsed Doppler echocardiography and aortography confirmed regurgitation at the aortic and mitral valves (both II°) (**Fig. 6**).

His dyspnea and inflammatory signs improved after 20 days of medication with methylprednisolone 24 mg/day. Then, the patient underwent surgery using a graft-valve prosthesis. The pathological findings of the removed aortic valve showed cusps which were not uniform in size, with fibrous thickening and deformities ; but no active inflammatory lesion was found microscopically (**Fig. 7**). The mitral valve leaflets were inspected during the surgical procedure, and were saved because only a mild thickening of the leaflets was noted. After surgery, the patient was followed-up and are now in good condition without deterioration of his mitral valve.

Discussion

The major signs of Behçet's disease are oral aphtha, genital ulceration, skin eruption and uveitis. Recently, additional cases of Behçet's disease with associated cardiovascular abnormalities have been reported ; however, valvular incompetence is a rather rare complication. To our knowledge, 15 such cases have been described including the above two[4~7]. Eight of these

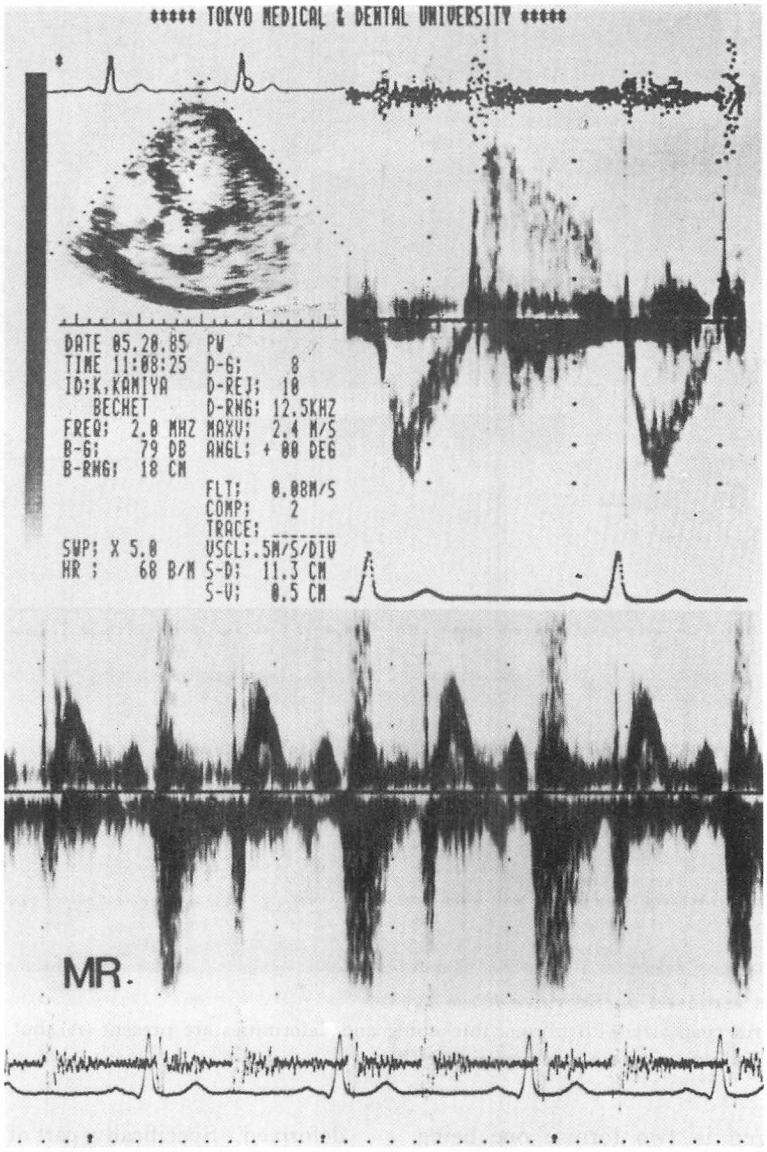

Fig. 6. Doppler echocardiograms (Case 2).
Combined aortic and mitral valve regurgitation are recorded.

cases were of isolated aortic regurgitation, and seven were combined aortic and mitral regurgitation. Concerning the clinical prognosis of all reported cases, six patients died due to heart failure and/or post-operative complications.

Among the seven patients who received valve replacements, Yamate et al.[7] described an unsuccessful artificial valve prosthesis which became detached from the aortic wall. This is similar to one of our reported cases (Case 1).

The pathogenesis of valvular regurgitation in Behçet's disease has not yet been clarified, but

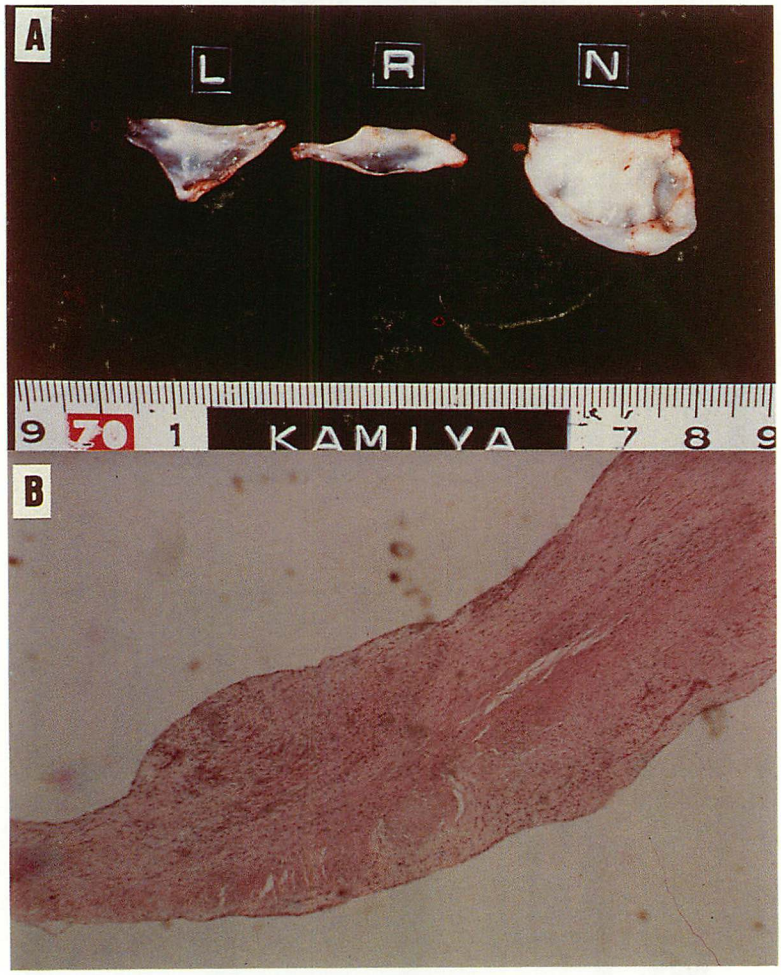

Fig. 7. The removed aortic valve (Case 2).
Non-uniform cusp size with fibrous thickening and deformities are present (A), but no active inflammatory findings are seen microscopically (B).

may be considered in two forms: one being dilatation of the aortic or mitral annulus caused by atypical inflammation; the other, caused by inflammation and destruction of tissue of the valve itself. The histological findings of our former case included intimal fibrous thickening, destruction of elastic fibers, and vascularization with round cell infiltrations. In the latter case, histologically, there were no active inflammatory findings in the resected aortic valve, although the valve cusps were unusually thickened and deformed. Specifically, part of the non-coronary cusp was stretched and enlarged, so that cineangiographically it appeared to be prolapsing. The grade of aortic regurgitation might gradually have increased in association with impaired cusp coaptation induced by tissue destruction or morphological deformities. Our patients received corticosteroid medications to suppress systemic inflammation; however, treatment for valvular lesions did not seem effective. With a moderate to severe grade of valvular incom-

petence, surgery is indicated before the occurrence of deterioration of cardiac function. The most serious complication of the valve prosthesis was poor attachment or instability of the artificial valve. This may have originated from weakness of the vascular tissues and poor healing ability after surgery. The experience gained from the above two cases indicates that AVR using a graft-valve prosthesis seemed successful in cases with Behçet's disease.

要　約

大動脈弁閉鎖不全，僧帽弁閉鎖不全を呈した Vasculo-Behçet 病の2例

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これまで Behçet 病における心病変，特に弁膜症についての報告は少なく，本邦および海外を含め，わずかに15例（本症例を含む）を認めるのみである．Behçet 病に弁膜症の合併が少ない一因として，vasculo-Behçet 病では病変の主体が静脈系であることが多いためと考えられるが，一旦発症すると，その予後は不良と言われている．今回，大動脈弁閉鎖不全と僧帽弁閉鎖不全を認めたものの，ステロイド療法と弁付きグラフト術が奏効した Behçet 病による連合弁膜症の2例を経験したので報告する．

症例 1：45歳，男性．口腔内アフタ，毛嚢炎様皮疹，外陰部潰瘍の既往を認め，43歳より心雑音を指摘された．44歳時，労作時呼吸困難のため当科入院し，心エコー図法および心カテーテル検査により AR (III 度), MR (II 度) と診断された．手術所見では大動脈弁と僧帽弁前尖にともに穿孔を認めたため，大動脈弁置換術 (AVR) と僧帽弁形成術 (MVP) を施行した．術後 prednisolone 20 mg/day を投与し，一時症状は改善したが，術後6ヵ月に大動脈弁縫着部から弁座の剝離による paravalvular leakage を認め，弁付きグラフトによる AVR を再施行した．

症例 2：40歳，男性．口腔内アフタ，毛嚢炎様皮疹，肛門周囲膿瘍の既往があり．40歳時，夜間呼吸困難，咳を主訴に入院した．心エコー図法，心カテーテル検査により AR (II 度), MR (II 度) と診断された．心不全症状と炎症所見が強いため，methylpredonisolone 24 mg/day に加えて抗心不全薬を投与し，臨床症状と炎症所見の改善が得られた後，弁付きグラフトによる AVR を施行し，術後の経過は良好である．

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