Infective Endocarditis Caused by *Propionibacterium granulosum*

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Infective endocarditis caused by *Propionibacterium granulosum* is a rare condition. We present a patient with a heavily calcified mitral valve who was infected with this organism.

PATIENT DESCRIPTION

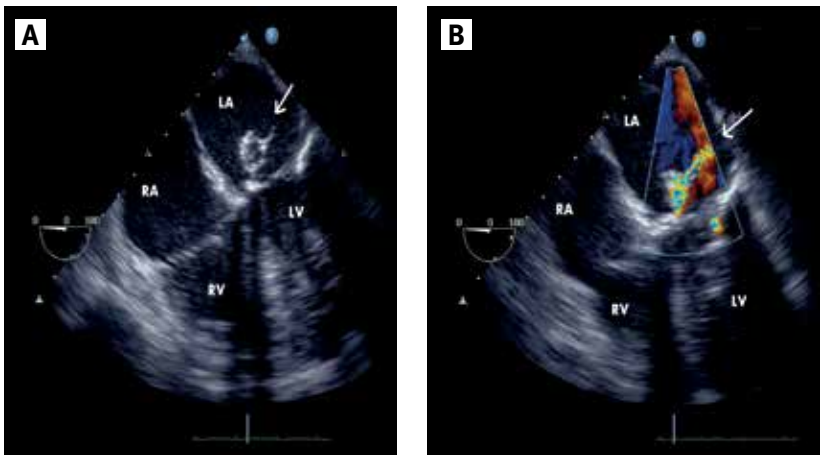
A 59 year old woman presented with chest pain and weight loss. Her medical history included non-obstructive coronary artery disease that had manifested as acute coronary syndrome (ST elevation myocardial infarction) 3 months prior to the present admission. Two weeks before the acute coronary event the patient received an injection of an analgesic agent to the epidural sac to alleviate low back pain.

The patient was hemodynamically stable and afebrile. Physical examination was remarkable for a systolic murmur 2/6 at the apex and splenomegaly. The electrocardiogram (ECG) showed ST-T changes, and blood chemistry revealed elevations in white blood cell count and troponin T level. Microinfarcts consistent with microemboli were detected on fundoscopy. Transthoracic echocardiography showed severe mitral annulus calcification (MAC) with mobile masses attached to the annulus, consistent with the echocardiographic findings after the patient's previous acute coronary event, in addition to new mitral regurgitation. Left ventricular function was good and there were no regional wall motion abnormalities. On transesophageal echocardiography, the mitral valve leaflets appeared thickened, and a large mobile mass attached to the posterior aspect of the mitral annulus was noted. There was moderate mitral regurgitation, with a systolic jet passing through the posterior mitral leaflet [Figures 1A and B].

A working diagnosis of infective endocarditis was made, and empiric treatment with ampicillin and cloxacillin was begun. Twenty-four hours later, mitral valve replacement was performed due to the appearance of signs of congestive heart failure along with echocardiographic evidence of mitral leaflet perforation and abscess formation at the site of the valve. The mitral leaflets and large mass were excised, followed by extensive decalcification of the annulus. The base of the left ventricle was reattached to the posterior annulus with pledge-supported Prolene sutures. After meticulous debridement of the annulus and the abscess, the annulus and posterior ventricular wall were reconstructed using a xenograft pericardial patch (4 x 3 cm). The patch was sutured to the healthy endocardium below the lesion up to the annulus and left atrium. A prosthetic tissue valve (Hancock II 25, Medtronic, Minneapolis, MN, USA) was implanted. The rest of the operation, including weaning from cardiopulmonary bypass, was uneventful.

Blood and mitral valve tissue cultures grew *Propionibacterium granulosum* on day 7 of hospitalization. The postoperative course was uneventful, and the patient was discharged after 7 days with a recommendation for 4 weeks of antibiotic treatment with penicillin and gentamycin. At the 12 month follow-up the patient was in

Figure 1. Transesophageal echocardiography, four-chamber view, showing:
[A] a large mass attached to the mitral valve (arrow), and
[B] regurgitation through the mass attached to the mitral valve (arrow)



LA = left atrium, LV = left ventricle, RA = right atrium, RV = right ventricle

satisfactory condition. Echocardiography showed good left ventricular function and normal prosthetic valve function.

COMMENT

We describe a rare case of *Propionibacterium granulosum* infective endocarditis in a native mitral valve with severe MAC. Although the available data preclude definitive conclusions, we suspect a possible causative effect between the endocarditis and the acute coronary event via coronary emboli from the vegetation. Nevertheless, this remains a hypothesis since no definite proof for active infection disease at the time of the coronary event was evident.

Propionibacterium spp. is a member of the normal microbial flora of the skin. In rare cases it may cause serious infections, usually involving a medical device. In a review of the literature published during the period January 1998 to December 2005, Clayton et al. [1] identified 33 cases of *Propionibacterium* infective endocarditis. Most were due to *Propionibacterium* acne and only 3 to *Propionibacterium granulosum*. The reported incidence of *Propionibacterium* infective endocarditis was 0.3–1.4 cases per year [1] However, the true incidence is not known because many cases are characterized by an indolent clinical course and a minimal increase in inflammatory markers, often leading to misdiagnosis. Furthermore, up to 7–14 days are needed to isolate this slow-growing pathogen, and positive results of blood cultures are often attributed to external contamination.

About 42% of cases of *Propiniobacterium* infective endocarditis occur in native valves and 48% in prosthetic valves; intracardiac material such as pacing wires is involved in 9% [1]. Among patients with native valve infection, the mitral valve is most commonly affected. Intracardiac abscess has been reported in 29% of native valve infections and in 53% of prosthetic valve infections [1-3].

We present the fourth reported case of infective endocarditis caused by *Propiniobacterium granulosum*. The infection involved a severely calcified posterior leaflet of the native mitral valve and was complicated by an intracardiac abscess. MAC is a common finding in the elderly population and may predispose patients to infection due to turbulent flow and endothelial trauma. Nevertheless, its association with infective endocarditis has been described only rarely in the literature [4,5].

Propionibacterium spp. infections tend to occur in patients who have underlying medical conditions or prosthetic cardiac devices. Although the incidence is currently low, it may be expected to increase given the increasing longevity of the general population and the growing use of prosthetic cardiac devices. The case presented here should alert clinicians to the possibility of *Propionibacterium granulosum* as the culprit pathogen in cases of infective endocarditis. We recommend a high index of suspicion in cases of mobile masses (particularly when newly identified) even if calcified as a mobile part of calcified valve or annulus. In these cases a thorough anamnesis of invasive procedures is advised. In addition, if blood cultures are ordered, the physician should consider the possibility of an agent, as in our patient. This requires that the samples undergo a prolonged culture period (more than 7 days) before the diagnosis of bacteremia is rejected.

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