

A Case of Spontaneous Native Aortic Valvular Thrombosis that Caused Aortic Stenoin insufficiency in the Bicuspid Aortic Valve

Soo Jin Cho, MD¹, Jeong Hoon Yang, MD¹, Jae Uk Shin, MD¹, Ji Eun Uhm, MD¹,
Sang-Chol Lee, MD¹, Seung Woo Park, MD¹ and Pyo Won Park, MD²

¹Departments of Medicine and ²Thoracic and Cardiovascular Surgery, Cardiac and Vascular Center,
Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

ABSTRACT

Spontaneous native aortic valvular thrombosis is an uncommon event that usually results from cardiac catheterization, bacterial endocarditis or a hypercoagulable state. We report here on a case of native valvular thrombus that was incidentally detected as masses that caused aortic stenoin insufficiency during routine follow-up, and the patient was without any of the previously described precipitating factors. The patient underwent aortic valvular surgery for removal of the aortic valvular mass. The pathological findings of the aortic valve showed organized valvular thrombus without evidence of any tumor. (*Korean Circulation J* 2006;36:666-668)

KEY WORDS : Thrombus ; Aortic valve ; Bicuspid ; Aortic stenosis ; Aortic valve insufficiency.

Introduction

There are some case reports on spontaneous native aortic valvular thrombosis, which can be either silent or clinically evident systemic emboli. We report here on a case of spontaneous native aortic valvular thrombosis in a male patient with a bicuspid aortic valve, and he presented with aortic valvular masses that caused aortic stenoin insufficiency.

Case

A previously healthy 48-year-old man came to the cardiology outpatient clinic because of intermittent chest discomfort. There was no remarkable finding on the physical examination. His electrocardiogram was normal and a treadmill test showed no evidence of myocardial ischemia. The echocardiographic examination demonstrated normal left ventricular size and contractility, and mild aortic regurgitation was observed with the bicuspid aortic valve having fused right and left cusps (Fig. 1A). After a year, a new systolic murmur on the right parasternal border and a diastolic

murmur on Erb's point were detected during regular follow-up. The echocardiographic follow-up examination showed moderate aortic valvular stenosis and regurgitation with thickened cusps. The 1.08 × 1.17 cm sized mass on the verge of the noncoronary cusp and a 1.09 × 0.86 cm sized mass on the edge of the fused right and left coronary cusps were identified on the transthoracic echocardiographic examination (Fig. 1B). Aortic valve replacement with a mechanical valve was done to remove the valvular masses. The masses covered with cusps at the aortic surface and they protruded to the ventricular surface with a nodular nature (Fig. 2). Microscopic examination revealed fibromyxoid valvulopathy with only intravalvular fibrin deposits without any cellular component (Fig. 3). There were no signs of infective endocarditis. His blood tests showed no evidence of a hypercoagulable state, including antiphospholipid antibody syndrome. He has been treated with warfarin after the operation for targeting an INR of 2 to 3.

Discussion

Spontaneous native aortic valvular thrombosis is an uncommon complication, and especially in the absence of any hypercoagulable or infectious state. Thrombus formation on a native aortic valve usually follows local trauma such as cardiac surgery or catheterization,¹⁾ or it occurs as a complication of bacterial endocarditis.²⁾ There have been a few case reports of

Received : May 24, 2006

Accepted : June 14, 2006

Correspondence : Seung Woo Park, MD, Departments of Medicine, Cardiac and Vascular Center, Samsung Medical Center, Sungkyunkwan University School of Medicine, 50 Irwon-dong, Gangnam-gu, Seoul 135-710, Korea

Tel: 82-2-3410-3419, Fax: 82-2-3410-3849

E-mail: swpark@smc.samsung.co.kr

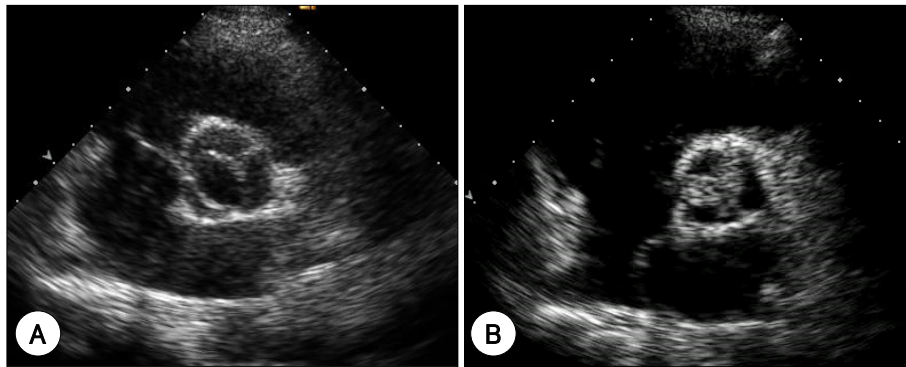


Fig. 1. Echocardiographic finding of the aortic valve in the parasternal short axis view. The bicuspid aortic valve with fusion of the right and left coronary cusps on the initial evaluation (A) was found without evidence of any valvular mass. However, a newly developed valvular mass was found on the 1-year follow-up evaluation (B).

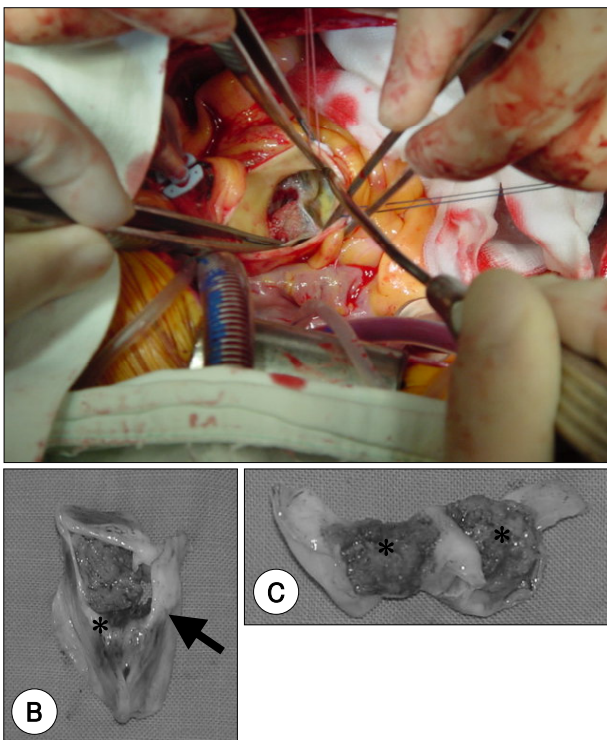


Fig. 2. Operative findings. The aortic valvular mass was viewed from the ascending aorta in the operative field (A). The excised aortic valve with a mass was observed with the fusion of right and left coronary cusps (arrow). The mass protruded into the ventricular surface (B). Cutting at the commissure of the left and non coronary cusps showed two nodular masses at the ventricular surface of the aortic valve cusps (C). Asterisks in B and C indicate the thrombotic masses.

native valvular thrombosis with a hypercoagulable status, like is noted for antiphospholipid antibody syndrome or protein S deficiency.^{3,4)}

When a hypercoagulable condition is not present, almost all the reported cases of native aortic valvular thrombosis have displayed underlying aortic valvular problems such as a bicuspid aortic valve or a calcified stenotic aortic valve.^{1,5,6)} Local flow turbulences, which are noted in a restricted valvular orifice like the bicuspid valve in our case, promote repeated cycles of thro-

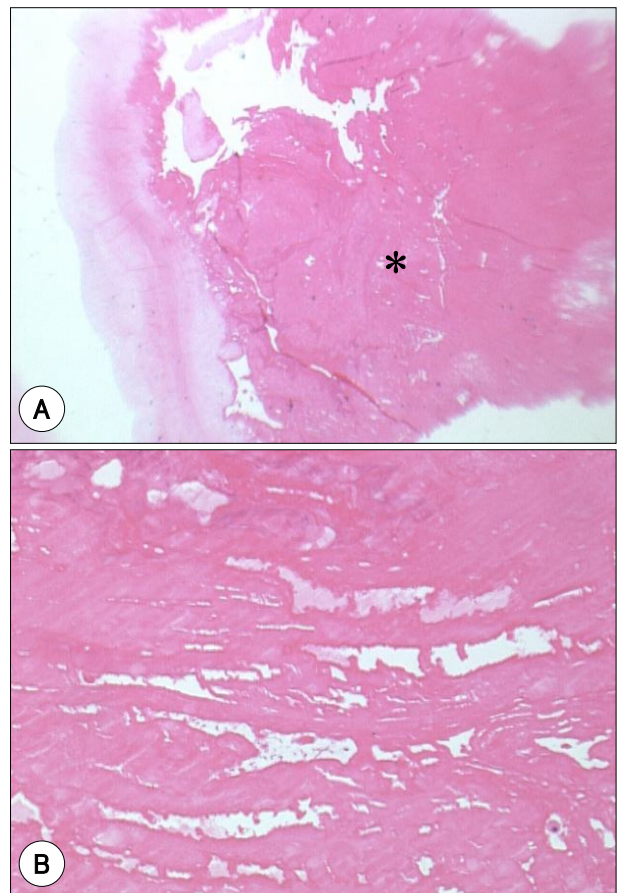


Fig. 3. Microscopic findings of the aortic valvular mass. Fibrin deposition (asterisk) with intact endothelium of the aortic cusp was found (A). The magnified view showed pure fibrin deposits on the hematoxylin and eosin staining (B).

mbus deposition, organization and re-endothelialization with progressive thickening. The organization resulting from such thrombi may contribute to the continuous process of stenosis and deformation of the valve.⁷⁾

The bicuspid aortic valve is a common congenital anatomic defect that represents one of the most common causes of aortic valvular dysfunction, and this

has an incidence in the general population of about 2%.⁸⁾ The incidence of aortic stenosis secondary to bicuspid aortic valve was reported as 54%, while that of aortic insufficiency was 1.5 to 3%. Bicuspid aortic valve is the second most common cause requiring aortic valvular replacement following rheumatic heart disease.⁹⁾

Native valvular thrombus is hard to differentiate from tumors, and especially papillary fibroelastoma, which is the most common valvular tumor, as was seen in our current case. Both native valvular thrombus and papillary fibroelastoma can cause systemic embolic events. So, this valvular disease is an indication for prompt surgical resection, regardless of its size and shape, not only because of the need to pathologically confirm it, but also due the potential of life-threatening complications from a left-sided mass.¹⁰⁾

Our report represents a rare case of spontaneous native aortic valvular thrombosis of a bicuspid aortic valve, in which the thrombus formation may have been related to the local hydrodynamic flow conditions. There was no clinical evidence of infection or a hypercoagulable state. In conclusion, anticoagulation and urgent surgery is indicated to confirm the pathology and also to prevent possible embolic accidents in the case of native valvular thrombosis.

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