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Aortic Regurgitation due to Commissural Dehiscence of the Aortic ValveKen Okamoto and Toshihiro Fukui

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Abstract

Commissural dehiscence of the aortic valve is a rare cause of aortic regurgitation. We report a 53-year-old male who had progressive aortic regurgitation and aortic root dilatation. A flap or intimal tear of the proximal aorta was absent with echocardiography and computed tomography. Transesophageal echocardiography revealed prolapse ofthe right and left coronary cusps with no intimal flap in the ascending aorta. During the operation, there was no dissection or intramural hematoma in the ascending aorta. However, there was dehiscence of the commissure between the right and left coronary cusps of the aortic valve. Aortic root and ascending aortic replacements were successfully performed. Commissural dehiscence of the aortic valve should be taken into account when prolapse of the aortic cusp is the cause of aortic regurgitation.

Keywords: Aortic surgery; Aortic regurgitation; Aortic valve surgery; Aortic root

Introduction

Commissural dehiscence of the aortic valve is a rare cause of aorticregurgitation. This condition has been documented in only a few case reports [1-5]. Commissural dehiscence of the aortic valve isoccasionally found intraoperatively because preoperative diagnosis of this condition is difficult. We report a case of commissural dehiscence of the aortic valve that caused aortic regurgitation and aortic root dilatation. CaseA 53-year-old man was admitted to our hospital with congestive heart failure. He had dyspnea on exertion 1 month before referral to our hospital. His symptoms improved after use of diuretic drugs. Transthoracic echocardiography demonstrated severe aortic regurgitation and moderate mitral regurgitation with left ventricular dilatation (left ventricular diastolic dimension, 67 mm; left ventricularsystolic dimension, 50 mm). Contrast-enhanced computed tomography (CT) showed dilatation of the aortic root (sinus of Valsalva, 45 mm). A flap or intimal tear of the proximal aorta was absent with echocardiography and CT. Transesophagealecho cardiography (TEE) was performed to assess the cause of aorticregurgitation. TEE revealed prolapse of the right and left coronarycusps (Figure 1) with no intimal flap in the ascending aorta. Surgerywas planned after medical control of heart failure. Median sternotomy was performed. When the pericardium wasopened, serous effusion was observed. Moreover, tight adhesionbetween the ascending aorta and pulmonary artery was observed.Cardiopulmonary bypass was performed with ascending aortic andbicaval venous cannulations.Figure 1: Transesophageal echocardiogram demonstrating prolapseof the right and left coronary cusps with no flap in the ascendingaorta.After the adhesion around the ascending aorta was dissected, anaortic clamp was applied and cardiac arrest was obtained. Mitralannuloplasty with a semi-rigid ring (size, 30 mm) was performed. Thebody temperature was decreased to 25°C, systemic perfusion wastemporarily arrested, and retrograde cerebral perfusion was started. The ascending aorta was resected, and replaced with a 26-mm Triplexgraft (Vascutek Terumo, Tokyo, Japan) with one branch. After completion of distal aortic anastomosis, systemic perfusion through the side branch of the graft was resumed. There was no dissection orintramural hematoma in the ascending aorta. However, there wasdehiscence of the commissure between the right and left coronary cusps of the aortic valve (Figure 2). Valve leaflets were slightlyatherosclerotic, and the aortic wall was normal. We performed aorticroot replacement with a commercially available composite valvedconduit (25–28 mm; Carboseal, CarboMedics, Austin, TX). The Okamoto and Fukui

Discussion

Commissural dehiscence of the aortic valve is a rare cause of aorticregurgitation. Aortic regurgitation sometimes occurs secondary toacute aortic dissection. Aortic leaflet prolapse occurs when dissectionextends into the aortic root, and disrupts normal attachment of leafletsto the aortic wall. In the present

case, prolapse of the right and leftaortic leaflets occurred by dehiscence of the commissure between theright and left aortic cusps. This condition has been documented in onlya few case reports [1-5]. Although the cause of aortic commissuraldehiscence is unknown, hypertension is considered to be the mostlikely cause [3].Aortic valve replacement with or without fixation of the dehiscentaortic wall is a common procedure [1-3]. Another treatment of choiceis aortic root replacement [1,4,5]. In the present case, aortic rootreplacement with a valved conduit was performed because the aorticroot and ascending aorta were dilated. An aortic valve-sparingoperation may be an alternative procedure in patients without heartfailure and other cardiac procedures (mitral valve annuloplasty andascending aortic replacement).In conclusion, commissural dehiscence of the aortic valve is a rarecause of aortic regurgitation. We should take this condition intoaccount when prolapse of the aortic cusp is the cause of aorticregurgitation.

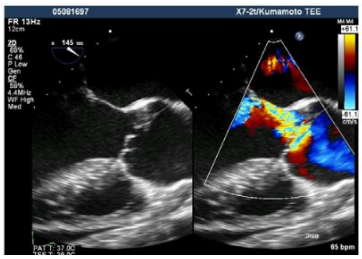

Figure 1: Transesophageal echocardiogram demonstrating prolapseof the right and left coronary cusps with no flap in the ascendingaorta

Biography:

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