Bilateral Coronary Ostial Stenosis and Aortic Regurgitation due to Syphilitic Aortitis


Coronary ostial stenosis in otherwise normal coronary vessels, is a rare complication of syphilitic aortitis, and most of the cases are found at autopsy. We report here a case in which bilateral coronary ostial stenosis and aortic regurgitation due to syphilitic aortitis was diagnosed; coronary artery bypass graft and aortic valve replacement were then performed. The macroscopic finding and the histopathological examination of the ascending aorta revealed the presence of syphilitic aortitis. It is important to note that syphilis is one of the causes of coronary ostial stenosis in young adults associated with aortic regurgitation.

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Key words: coronary artery bypass graft, aortic valve replacement

Introduction

Coronary ostial stenosis in otherwise normal coronary vessels, is a rare lesion and occurs at an incidence of 0.13 to 2.7% in coronary heart disease (1). It is the second most common complication of syphilitic aortitis (2). Although there has been a dramatic decline in the morbidity and mortality of late syphilis since the advent of penicillin (2), cases of cardiovascular syphilis are still present. In this report, we describe a case of bilateral coronary ostial stenosis and aortic regurgitation due to syphilitic aortitis.

Case Report

A 50-year-old man with a 4-year history of typical effort angina developed retrosternal oppression with dyspnea in the previous 12 months. He was admitted to a hospital with the diagnosis of heart failure due to aortic regurgitation. As the dyspnea and the retrosternal oppression disappeared with diuretics treatment, he was discharged. For the next six months, he did not continue to take his medications although as he was instructed. He had a gradually increasing retrosternal oppression associated with dyspnea and returned to the same hospital. The dyspnea improved with diuretic therapy, then the patient was referred to this hospital. The patient did not have any other medical history except for chronic hepatitis C, and no positive coronary risk factors.

On examination, the pulse was 64 beats/min, and the blood pressure was 102/42 mmHg. Breathing sounds were clear. A systolic ejection murmur (Levine II/VI) and a diastolic blowing murmur (Levine III/VI) were heard at the 3rd sternal border, and a diastolic rumbling murmur (Levine II/VI) was heard at the apex. The liver was palpable 2 cm below the right costal margin on the right midclavicular lines. The nail beds revealed Quincke’s sign.

On laboratory findings, peripheral blood count and blood chemistry were normal. Although C-reactive protein (CRP) was negative, rapid plasma reagin card test (RPR), Treponema pallidum hemagglutination test (TPHA), and fluorescent treponemal antibody absorption test (FTA-ABS) were 32, 160, and 2,560-fold, respectively. Chest radiograph demonstrated a cardiothoracic ratio of 0.52, no pulmonary congestion and no pleural effusion (Fig. 1). The electrocardiogram showed a high voltage in V5, and ST-T strain pattern in I, aVL, and V5_6 (Fig. 2). Coronary angiography demonstrated complete obstruction of the right coronary ostium with good collaterals from the left coronary artery, and 75% stenosis of the left coronary ostium, otherwise coronary vessels were normal (Fig. 3). Retrograde aortography showed aortic regurgitation (grade 3 by Seller’s classification), and dilatation of the ascending aorta (Fig. 4),
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but there was no abnormality in thoracic and abdominal aorta. Coronary artery bypass graft and aortic valve replacement were performed. At the operation, the aortic cusps were hypertrophied without calcification, the right coronary ostium was completely obstructed, and the left coronary ostium was also obstructed, although some opening remained. The aortic valve was replaced with a 21mm Björk-Shiley prosthetic valve, and coronary artery bypass graft was performed to the left anterior descending branch with the left internal thoracic artery, and also to the right coronary artery and the obtuse marginal branch with the saphenous vein grafts. Histopathological examination of the ascending aorta revealed intimal fibrous thickening, and lymphocyte infiltration in media and adventitia, and patchy medial necrosis with destruction of elastic fibers (Fig. 5). These operative and histopathological findings were compatible with syphilitic aortitis.

Discussion

Coronary ostial stenosis in otherwise normal coronary vessels, occurs in patients with syphilitic aortitis (2), Takayasu’s disease (3), other forms of aortitis (4), and iatrogenic stenosis as a complication of coronary angiography or cardiac surgery (5–8). Its incidence is varied between 0.13 and 2.7% of coronary heart disease (1). Although syphilitic aortitis has declined due to the efficacy of antibiotic therapy (especially penicillin) and public health awareness for early syphilis, cases of cardiovascular syphilis are still present. Clinically, syphilitic aortitis causes various complications, such as asymptomatic aortitis, aortic regurgitation, aortic aneurysm, coronary ostial stenosis and gummatous myocarditis, in 10 to 15% of cases of untreated syphilis, and these complications are generally evident 10 to 20 years after the primary infection. Coronary ostial stenosis in patients with syphilitic aortitis is detected in 20% by Burch and Winsor (9) and 26% by Heggtevit (10). As many as 87% of patients with coronary ostial stenosis have aortic regurgitation (11). For the treatment of coronary ostial stenosis, antibiotic therapy should be given at the earliest possible time and surgical correction pursued in those patients with limiting angina (2). Endarterectomy has been employed since 1960’s, and recently, coronary artery bypass graft is the procedure of choice. For patients with aortic regurgitation, aortic valve replacement is employed at the same time as endarterectomy or coronary artery bypass graft is done. Regarding postoperative problems, anastomotic restenosis of the ascending aorta due to continuous infection may occur in endarterectomy or coronary bypass graft with the saphenous vein, but in coronary artery bypass graft with internal thoracic arteries, this risk may be lessened (12).
Figure 3. Selective coronary angiography. A) Right coronary artery in LAO45°. B) Left coronary artery in LAO45° Cranio30°. C) Left coronary artery in RAO30°. These angiograms demonstrated complete obstruction of the right coronary ostium (A: arrow) with good collaterals from the left coronary artery, (C: arrows), and 75% stenosis of left coronary ostium, (B: arrow); otherwise coronary vessels were normal.

Figure 4. Retrograde aortography in RAO30°. This aortogram showed aortic regurgitation (grade 3 by Seller’s classification), and dilatation of the ascending aorta.

In the present case, coronary risk factors were not detected from biochemical results, syphilitic serological tests were positive, and bilateral coronary ostial stenosis in otherwise normal coronary vessels, and aortic regurgitation were recognized, therefore syphilitic aortitis was suspected. For the treatment of this case, coronary artery bypass graft and aortic valve replacement were employed due to severe coronary disease, such as bilateral coronary ostial stenosis, and frequent anginal attack.

Figure 5. Histopathological examination of the ascending aorta (HE, ×160). Intimal fibrous thickening, lymphocyte infiltration in media and adventitia, and patchy medial necrosis with destruction of elastic fibers were revealed.
due to ischemia, and also aortic regurgitation accompanied by congestive heart failure. Histopathological examination of the ascending aorta was compatible with syphilitic aortitis, but immunohistochemistry with the antibody to Treponema pallidum was negative. After operation, penicillin was prescribed for the prevention of anastomotic restenosis of the ascending aorta due to continuous infection. But the peripheral white blood cell count was decreased due to the side effect of penicillin, therefore the administration of this drug was discontinued. In conclusion, we report a case of bilateral coronary ostial stenosis and aortic regurgitation due to syphilitic aortitis. It should be noted that syphilis is one of the causes of coronary ostial stenosis in young adults associated with aortic regurgitation.

References