Graft choice and timing of coronary bypass surgery in patients with vasculitis syndromes: A report of two cases

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Key words: Coronary artery bypass; polyarteritis nodosa; takayasu arteritis

Received: 05.01.2014  Accepted: 08.07.2014  e-published: 21.07.2014

Abstract

Polyarteritis nodosa (PAN) is a multisystem disease with necrotizing vasculitis of middle and small sized arteries. Takayasu arteritis (TA) is a rare nonspecific inflammatory disease with unknown cause, predominantly affecting the aorta and its main branches. There has not yet been a consensus on graft choice for patients with vasculitis syndromes. Here, we report one case with PAN and the other with TA undergoing coronary revascularization surgery.

Introduction

Premature occlusive disease of the coronary arteries remains an important predictor of overall morbidity and mortality in patients with vasculitis syndromes. Coronary artery involvement (76%) ranks second in frequency behind the renal arteries (85%). Polyarteritis nodosa (PAN) affects the coronary arteries in 50% of the patients and microscopically, all layers of the arterial wall are involved [1]. Takayasu arteritis (TA) includes a variety of nonspecific inflammatory symptoms and ischemic symptoms related to stenotic lesions or thrombus formation. Further progression of TA causes destruction of the media layer of the arterial wall, leading to aneurysms or rupture of the involved arteries.

The knowledge about the choice of bypass grafting of patients with vasculitis syndromes is limited in the literature [1,2]. In this article we review the graft choice for patients with vasculitis syndromes and our coronary revascularization surgery experience with two patients, one with PAN and the other with TA.

Case Reports

Case 1
The 59-year-old male patient with type II diabetes mellitus and hypertension had been followed with the diagnosis of PAN for 15 years. The patient also had a history of spontaneous splenic rupture due to familial Mediterranean fever 15 years ago. At the time of admission, he has been diagnosed with PAN with no prior cardiac symptoms were present. He admitted to hospital with anginal symptoms. Electrocardiography revealed abnormal ST wave depression in inferior derivations. Echocardiography was performed, and ejection fraction was calculated as 60%. Coronary angiography showed 90% stenosis of the left anterior descending coronary artery (LAD), and 70% stenosis of the right coronary artery and the circumflex artery (Cx). On pump coronary bypass surgery has been carried out with greater saphenous vein graft. Neither any aneurysm of the coronary arteries nor aneurysm of the left internal mammary artery (LIMA) could be detected intraoperatively. LIMA was prepared for histopathologic examination due to the known history of PAN. The flow of the LIMA was sufficient for arterial revascularization, but it was not a proper choice for the LAD revascularization due to the high-involvement risk of subclavian arteries. Received histopathologic segments showed completely intimal thickness and increase of the intermediate substance in media (Figure 1). The patient was discharged from the hospital in the post-operative 7th day uneventfully.

Case 2
The 47-year-old female patient with a known history of hypertension and TA, admitted to her cardiologist with the complaints of decreased effort tolerance. Transthoracic echocardiography showed mild decay of left ventricular systolic function and left ventricular segmental wall motion abnormality. Myocardial perfusion scintigraphy revealed severe ischemia in the LAD and the Cx. A conventional
coronary angiography with the aortography and selective subclavian arteriography has been carried out. The angiography showed critical stenosis of LAD and Cx with mild ostial stenosis of left subclavian artery. Pre-operative computed tomographic angiography showed severe atherosclerosis of the thoracic and abdominal aorta, and histopathologic examination showed lymphoplasmocytes cells in the intimal layer of ascending aorta and inflammatory infiltration with a small number of polymorph cells (Figure 2). The patient underwent three vessels coronary bypass surgery with greater saphenous vein graft. Due to the thickness of the ascending aorta the proximal anastomosis of the Cx saphenous vein graft was put on the saphenous vein graft of the LAD. The patient was discharged from the hospital in post-operative 6th day. No clinical problem occurred in the hospital stay period.

Discussion

The discussion about the choice of bypass grafting of patients with vasculitis syndromes, especially with PAN is limited in the literature [3]. The coronary involvements of PAN include atherosclerosis, diffuse coronary aneurysm, acute coronary dissection and rupture, trombosis and arteritis of coronaries [1]. Small to medium-sized arteries are involved by focal transmural inflammatory necrosis. Thus far, 10 cases of LIMA involvement of PAN have been described [4]. In our case, after examination of LIMA, its flow and external appearance was seen to be normal. However, we could not rule out the possible microscopic involvement of LIMA, we chose saphenous vein graft and have received LIMA biopsy. Received segments showed completely intimal thickness and increase of the intermediate substance in media. Angiographic imaging of LIMA to rule out stenosis or aneurysm development may be appropriate. However, we should not forget that the biopsy may have hit the area without disease due to focal involvement of PAN. We believe that the use of the saphenous vein graft to avoid the potential complication of arterial involvement is reasonable. Peroperative erythrocyte sedimentation rate and C-reactive proteins levels were normal. In the existence of active vasculitis treatment involves medications to suppress the immune system, including prednisone (high dose) and cyclophosphamide. Therapy results in remission or cure in 90% of cases. Clinical judgment should be used to weigh the risks and benefits of delaying coronary revascularization in an inflammatory course.

TA is a rare disease. The “typical” patient with TA is a woman under the age of 40. There is a 9:1 female predominance in this disease. TA is a chronic inflammatory condition that affects the largest blood vessel in the body (the aorta) and its branches. Thus, the complications of TA arise directly or indirectly from damage to these blood vessels. In regard to coronary artery bypass, saphenous vein graft is the recommended conduit, despite the greater patency rate of internal mammary artery primarily due to the risk of subclavian artery occlusion [5]. Due to the left common carotid and left subclavian artery stenosis in our patient we have used the saphenous vein graft for the LIMA bypass.

Conclusion

In conclusion, choice of conduit is still a question to be answered in patients with vasculitis, particularly with PAN and as the number of reported cases increased more precise evaluation will be possible.
References


