



Graft Choice and Timing of Coronary Bypass Surgery in Patients with Vasculitis Syndromes: Two Cases Report

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Abstract

Polyarteritis nodosa is multisystem disease with necrotizing vasculitis of middle and small sized arteries. Takayasu arteritis is a rare nonspecific inflammatory disease with unknown cause, predominantly affecting the aorta and its main branches. In the literature, experience about the appropriate graft selection and the long-term patency is reported for vasculitis syndromes such as Takayasu's arteritis but there were no data for Polyarteritis Nodosa. In this article we review the graft choice for patients with vasculitis syndromes and our coronary revascularization surgery experience with two patients, one with Polyarteritis Nodosa and the other with Takayasu's arteritis. There has not yet a consensus on graft choice for patients with vasculitis syndromes and it will be possible more accurate assessment if the number of cases increases.

Key words: Polyarteritis Nodosa, Takayasu arteritis, coronary artery bypass grafting, vasculitis

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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 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 Report 1

A 59- years old male patient with type II diabetes mellitus and hypertension had been followed with the diagnosis of PAN for fifteen years. He had also a history of spontaneous splenic rupture due to familial mediterranean fever fifteen years ago. At the time of admission he has been diagnosed with PAN with no prior cardiac symptoms. He admitted to hospital with anginal symptoms. Electrocardiography showed 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 (RCA) 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 LIMA could be detected intraoperatively. Left internal mammary artery (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 LAD revascularization due to the high involvement risk of subclavian arteries. Received histopathologic segments showed completely intimal thickness and increase of intermediate substance in media (Figure 1). The patient was discharged from the hospital in the postoperative 7th day uneventfully.

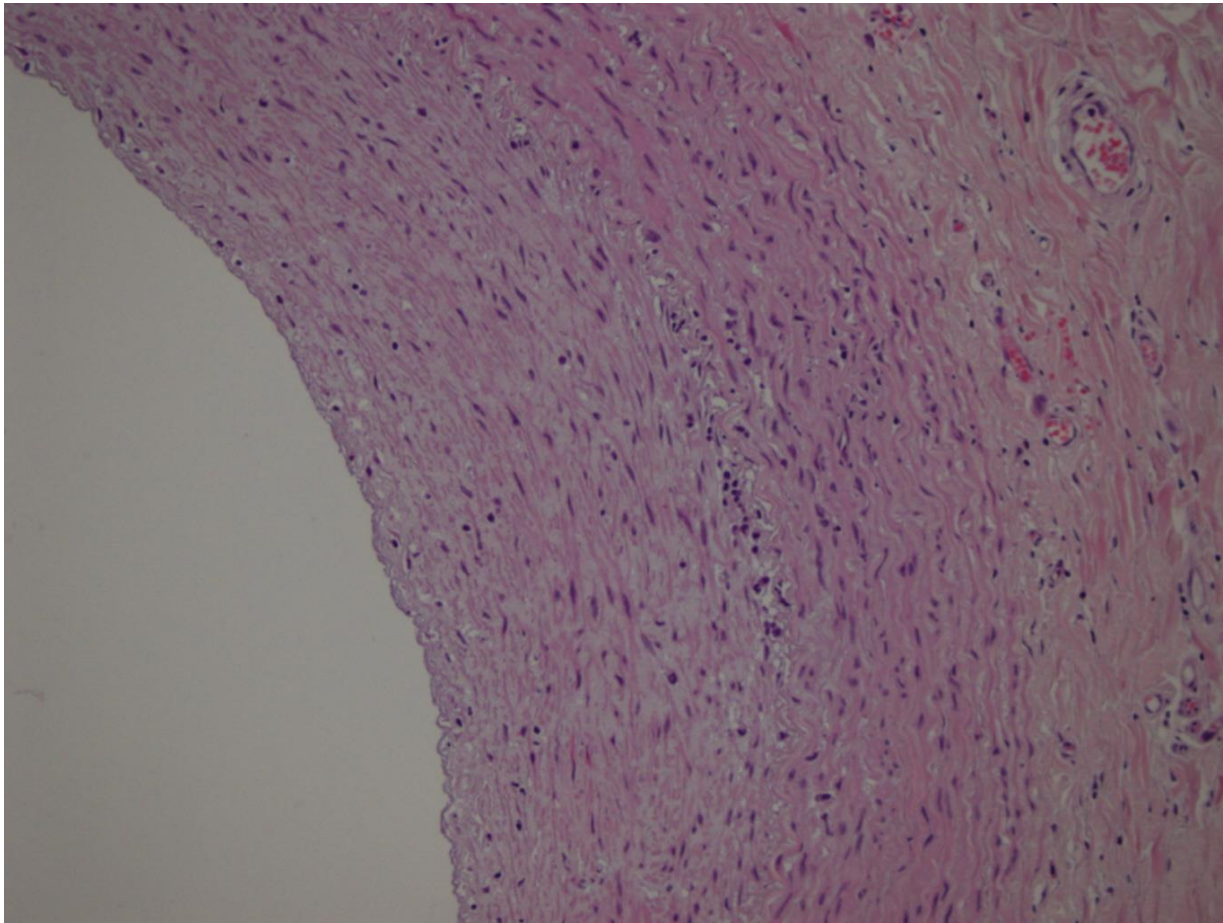


Figure1. Internal thoracic artery's intimal thickness and increase of intermediate substance in media.

Case Report 2

A 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. After myocardial perfusion scintigraphy showed severe ischemia in the LAD and the Cx. A conventional coronary angiography with 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. Preoperative 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 3 vessels on-pump coronary bypass

surgery with greater saphenous vein graft with proximally anastomosis to the ascending aorta. Because of the some atherosclerotic ascending aorta plaques 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 postoperative 6th day. No clinical problem occurred in the hospital stay period.

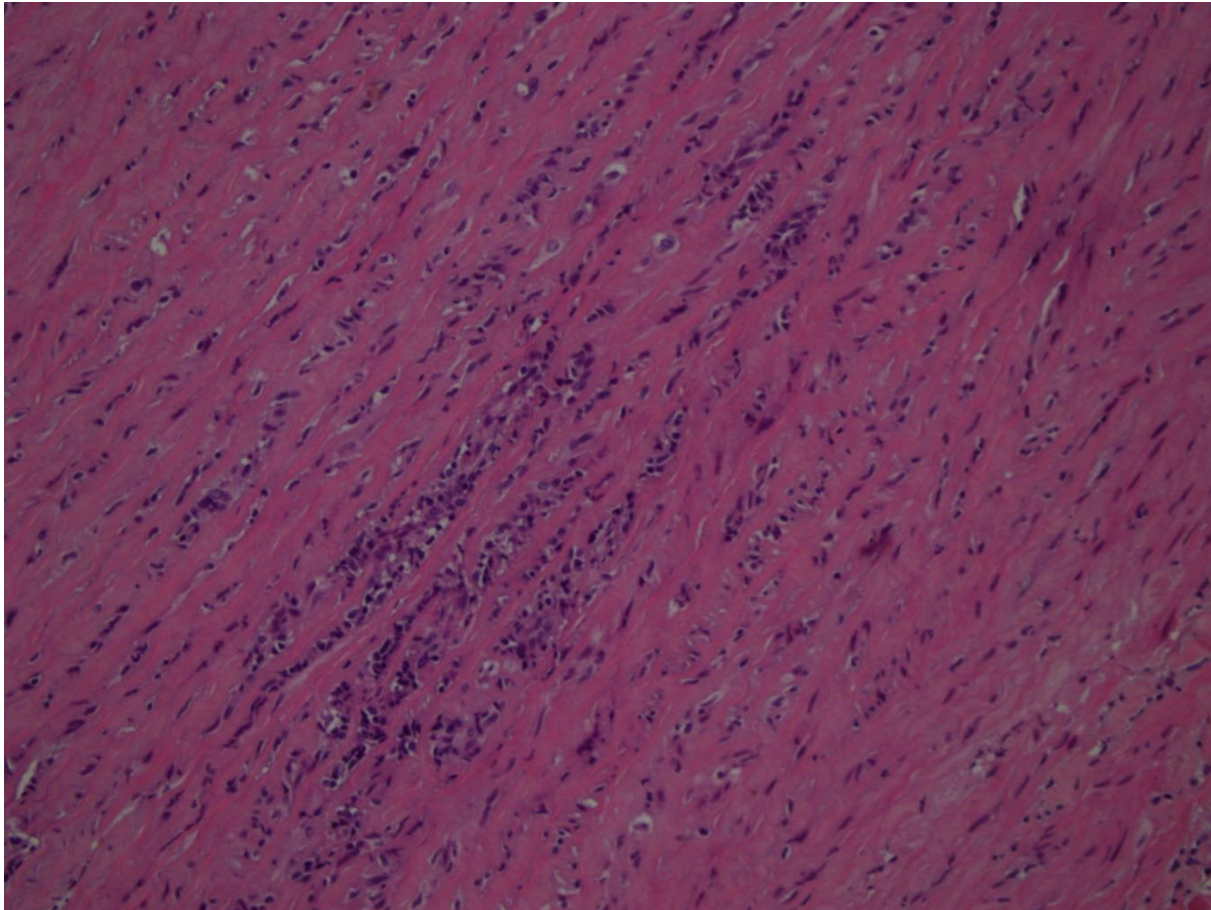


Figure2. Lymphoplasmocytes cells in the intima of the aorta and inflammatory infiltration with a small number of polymorph cells.

Discussion

The discussion about the choice of bypass grafting of patients with vasculitis syndromes especially with PAN is limited in literature [3]. The coronary involvements of PAN include atherosclerosis, diffuse coronary aneurysm, acute coronary dissection and rupture, thrombosis 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]. After examination of LIMA, its flow and external appearance was seen to be normal. However we cannot 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 intermediate substance in media. Angiographic imaging of LIMA to rule out stenosis or aneurysm development maybe appropriate. However we should not forget that the biopsy may have been hit the area without disease due to focal involvement of PAN. We believes that the use of the saphenous vein graft to avoid the potential complication of arterial involvement is reasonable. We did not use steroid or antiinflammatory drugs in these patients. Peroperative erythrocyte sedimentation rate and C-reactive proteins levels was normal. This situation showed that the patients were in inactive period. In the existence of active vasculitis treatment involves medications to suppress the immune system, including prednisone (high dose) and cyclophosphamide. Therapy results in remissions or cures in 90% of cases. The timing of the operation is important, because surgery should be avoided during the active stage of inflammation. Nonetheless, in a patient with unstable angina or myocardial infarction, surgery should be performed without delay, because myocardial infarction is a major sequela in such patients. 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 (or radial artery) primarily due to the risk of subclavian artery occlusion [5]. Because of the left common carotid and left subclavian artery stenosis in our patient we have used the saphenous vein graft for the LIMA bypass.

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.

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