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Case report - Coronary

Coronary artery bypass grafting for Takayasu arteritis with severe coronary, carotid, subclavian, and renal artery involvement and subsequent pregnancy

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Abstract

Takayasu arteritis is a rare idiopathic large-vessel vasculitis that involves the aorta and its major branches. It affects young women in their child-bearing period. We present a case of a 32-year-old lady with a history of remittent fever. Magnetic resonance angiography and arch aortogram showed aortic involvement with critical stenosis of both carotid and subclavian arteries. She also had critical ostial left main and right coronary artery stenosis as well as severe renal arteries involvement. The patient underwent coronary artery bypass grafting. She did well and after 12 months she got pregnant. She had an uneventful pregnancy and delivery without flaring of symptoms.

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Keywords: Takayasu; Coronary; Pregnancy

1. Introduction

Takayasu arteritis (TA) is an idiopathic vasculitis that affects the aorta and its major branches. The disease starts as an active inflammation and progresses to a later sclerotic stage. This leads to obliterative luminal changes in the affected arteries. The changes are usually most marked at branch points [1]. The coronary arteries are rarely affected and the disease usually involves the osteal regions [2].

The female to male ratio is 8:1. The mean age at the time of diagnosis is 29 years [1]. Coronary artery involvement presents as angina or myocardial infarction [3].

Ishikawa proposed criteria for diagnosis of TA that include, age <40 years as obligatory criterion, bilateral subclavian artery lesions as major criteria plus 9 minor criteria [4]. According to Ishikawa et al. diagnosis of TA depends on the presence of the obligatory criterion plus either two major or one major and two or more minor criteria.

Pregnancy is common in TA due to age and gender preference. Coronary artery bypass grafting (CABG) is used to treat coronary lesions in TA and its long-term patency rate is good [5].

2. Case report

A 32-year-old married Pakistani woman was referred to our hospital in January 2004 with more than one year history of remittent fever and seven month history of chest

pain. Clinical examination revealed absent pulses of both radial and right carotid arteries, early diastolic murmur of aortic regurgitation. Her ESR and CRP were both high (ESR=95; CRP=28).

Twelve lead ECG during chest pain showed significant ST-segment depression of the anterior chest leads. Trans-thoracic echocardiography (TTE) revealed mild to moderate aortic regurgitation. Magnetic resonance angiography (MRA) (Fig. 1) revealed total occlusion of both subclavian arteries. There was total occlusion of right common carotid artery and 50–60% stenosis of the left common carotid artery. Coronary angiography (Fig. 2) revealed 95% ostial left main stenosis, 95% ostial right coronary artery stenosis. Aortic root injection revealed mild to moderate aortic regurgitation. Aortic arch injection confirmed the MRA findings. Injection in the abdominal aorta at the renal arteries level revealed mildly stenotic aortic segment, occluded right renal artery and 50% stenosis of left renal artery.

She underwent CABG with one vein graft to each LAD and RCA (Y graft) due to aortic disease. The post-operative recovery was uneventful. She was started on high doses of corticosteroids. Her ESR dropped from 95 to 40 and CRP from 28 to 9. She was discharged home in stable condition on prednisolone 20 mg BD, amlodipine 5 mg OD, and Atenolol 50 mg OD.

At two-month follow up, ESR was 24. At 6-month she was symptom free. At almost one year follow up the patient got pregnant, she completed her pregnancy successfully with no flaring of symptoms. She delivered by cesarean section because of breach fetal presentation. Early post-

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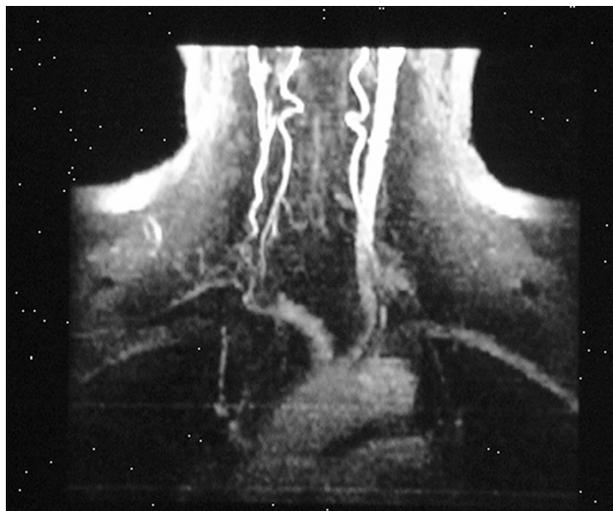


Fig. 1. MRA shows total occlusion of both right subclavian and right common carotid arteries and 50–60% stenosis of the left common carotid artery.

partum her ESR went up to 75 which was controlled by increasing the dose of corticosteroids. The baby was completely healthy and both the mother and her baby were discharged home in a good condition.

3. Discussion

Our case is a 32-year-old lady from Pakistan. Geographically, Pakistan is within the area of high prevalence of TA. In our case, there was a delay in the diagnosis of TA of around one year. The delay in diagnosis in the recent report by Vanoli et al., who collected data from 104 Italian patients with TA, was 15.5 months [6].

Our patient presented with symptoms of coronary ischemia. This presentation is not common in TA [3]. Our patient fulfilled the obligatory criteria and the entire major plus six minor criteria of TA as proposed by Ishikawa [4]. The diagnosis was confirmed using MRA and aortic angiogram. The involvement of the coronary arteries was severe and classic for TA, affecting the ostial part and sparing the distal vessels [2].

The decision to deal with her coronary disease first was based on her severe angina, and also on her critical ostial coronary lesions. CABG was used in preference to percutaneous coronary intervention (PCI) because of her critical ostial left main and right coronary lesions. In TA, both surgical and PCI can be performed with low morbidity and mortality. The best long-term outcomes are achieved with

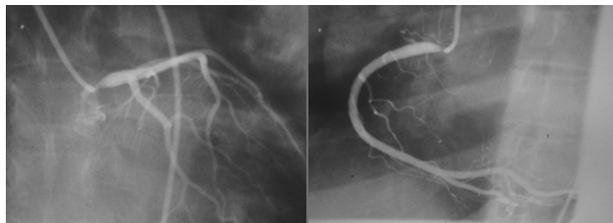


Fig. 2. Coronary angiography shows the typical critical ostial left and right coronary artery lesion sparing the distal vessels.

conventional bypass grafts [7]. The early post-operative recovery was uneventful. She was discharged home after 8 days. At 6-month follow up, she was asymptomatic.

At almost 12 months she got pregnant. Her pregnancy was uneventful and she delivered a healthy baby. Early postpartum she had mild disease activity that was controlled with increasing the dose of corticosteroids. The majority of cases reported for pregnancy in TA had favorable maternal and fetal outcomes [8].

Pregnancy in TA is not uncommon. Our patient represents a severe case of critical biosteal coronary involvement and had CABG before getting pregnant. Our patient did not have angina during pregnancy and after delivery. Now she is 22 months after CABG with normal exercise tolerance which reflects well mid-term results.

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Appendix A. ICVTS on-line discussion

Authors: Mehmet Ates, Nevzat Uslu, Umit Gullu (Siyami Ersek Thoracic and Cardiovascular Surgery Center, Istanbul, Turkey)

eComment: Takayasu arteritis (TA) is chronic inflammatory disease of unknown etiology. This disease is known epidemiologically for its predominance in women and high prevalence in Asian countries. It commonly affects the aorta and its main branches, as well as the coronary and pulmonary arteries, and causes stenosis, obstruction, and/or aneurysmal formation in the arteries involved.

We performed the case of a 'burned out' TA patient presenting with popliteal artery aneurysm and with multiple cardiovascular complications. A 59-year-old woman first presented with pain and mass in the popliteal region. Ten years previously, she had been operated for right brachial artery emboli. She was known to have type 2 diabetes mellitus and hypertension for four years. At examination, the patient was in good general condition. Blood pressure was 240/120 in the legs and weak pulses were present in upper limbs. Bruits were heard in both carotid arteries. Routine laboratory work including C-reactive protein, ANA, anti-DNA and erythrocyte sedimentation rate except fasting glucose level was normal. ECG and her chest X-ray were also normal. She underwent magnetic resonance imaging for mass on her popliteal region and a large (3×5 cm) popliteal aneurysm was detected. Both subclavian arteries were totally occluded and the flow in distal axillary artery was patent. Left vertebral and left external carotid arteries were completely occluded. Irregularities concordant with arteritis and low-middle

grade stenoses were present in the right and left common carotid arteries. Multiple stenosis and irregularities were present in infrarenal abdominal aorta and high grade preocclusive focal stenosis (99%) was present in both orifices of renal. Six months later than the initiation of the medical therapy popliteal artery by-pass surgery using saphenous vein graft was performed for the popliteal aneurysm without any complications.

In this case, pharmacological intervention and palliative surgery for popliteal aneurysm and renal angioplasty for severe bilateral renal ostial stenosis were performed. We performed renal angioplasty because associated renal arterial stenoses should always be corrected in TA with significant hypertension and or renal insufficiency; if not, the prognosis of hypertension is poor. Blood pressure control was a serious issue with this patient. To prevent hypertensive heart failure and stroke, the blood pressure should be slightly low. However, to avoid organ ischemia, including that of brain, kidney, and that of extremities, a somewhat higher blood pressure is preferable. This patient's systolic blood pressure was maintained at near 80 mmHg in the arms and 150-160 mmHg in the legs. Systolic blood pressure levels under this gave rise to symptoms like dizziness. This level was appropriate for this

patient and careful, long-term follow-up is necessary. Throughout the follow-up, unknown fever and high erythrocyte sedimentation rate and elevated C-reactive protein were not observed. Therefore, steroid and immunosuppressive treatment was discontinued.

Suspected Takayasu's arteritis deserves a complete vascular exploration including aorta, its main branches, coronary arteries and peripheral arteries because of its hypertensive complications. In the inflammatory phase, corticosteroids and antiplatelet drugs are classically recommended and surgery and percutaneous interventions are usually avoided because of a high incidence of complications.

We have presented an unusual case of Takayasu arteritis presenting with popliteal aneurysm and with multiple cardiovascular complications, the combination of which has not been reported previously. The widespread character of the disease in this patient made complete surgical and/or surgical interventions impossible for this patient. Patient was discharged with NYHA class II with close blood pressure control and renal Doppler studies.

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