

Case Report

Coronary-Subclavian Steal Syndrome: A Rare Cause of Angina Pectoris

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A 70-year-old woman with recurred episodes of angina pectoris was admitted to our hospital for evaluation. After coronary angiography, a coronary-subclavian steal syndrome was reveled. A PICA in subclavian artery was performed to treat this patient.

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1. Introduction

We report a rare cause of recurrent chest pain after coronary artery bypass surgery. A patient with subclavian steal syndrome, treated effectively with percutaneous balloon angioplasty, is described.

2. Case Report

A 70-year-old woman, with recurrent angina six years after coronary artery by pass grafting was referred to our department for evaluation. The patient with a history of hypertension, type 2 diabetes, and hypercholesterolemia, six years prior to evaluation, had undergone coronary artery bypass surgery with left internal mammary artery (LIMA) anastomosed to the left anterior descending (LAD) artery and saphenous vein graft to the obtuse marginal branch artery of the circumflex artery. She had remained symptoms free until 3 weeks ago when she started having prolonged episodes of chest discomfort accompanied with exertional dyspnea. Remarkably she experienced chest pain on exercising the left arm. Examination revealed a significant difference of blood pressure between the arms (right 102/59, left 80/40). The patient underwent an exercise test that was positive for ischemia in the posterolateral wall of the left ventricle. Coronary angiography demonstrated severe left main stenosis and patent vein graft to the left circumflex marginal branch. The left internal mammary artery was opacified retrogradelly through the LAD. Aortic arch angiography documented total occlusion of the left subclavian

artery proximal to the origin of the LIMA (Figure 1). When digital angiography highlighted exactly the relationship of the left subclavian occlusion in regard to the rest of the vessels of the aortic arch, the patient was referred to be treated preferentially with percutaneous angioplasty.

3. Discussion

Coronary-subclavian steal syndrome (CSSS) was first reported in 1974 [1]. The incidence of CSSS has increased the last years from 0.5% [2, 3] to 3.4% [4] in patients who undergo CABG using the LIMA as a conduit bypass graft. Ischemic symptoms can present immediately following CABG surgery or up to 7 years later [2, 3]. Symptoms of CSSS may include angina, vertigo, and syncope with left arm exercising. Patients who remain asymptomatic despite angiographic evidence of CSSS are at increased risk of sudden death. Examination may reveal differences in blood pressure between the arms. This finding may be suggestive of subclavian stenosis but a normal blood pressure does not exclude the problem. The mechanism of CSSS consists of a stenosis in the proximal part of the subclavian artery resulting in reversal of flow in LIMA graft and subsequent ischemia in the territory it supplies. The subclavian artery stenosis produces a negative pressure gradient between subclavian and LIMA graft. Subsequent retrograde filling of the subclavian artery via the LIMA graft causes the subclavian to "steal" blood from the coronary circulation.

Both operative and radiological techniques can be used to restore adequate flow to the subclavian artery with relief

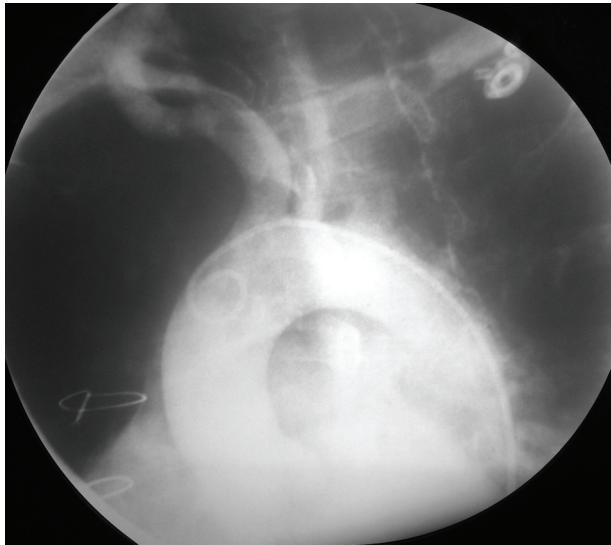


FIGURE 1: Arch aortic angiography showing the total occlusion of the left subclavian artery.

of angina [5]. Percutaneous treatment of subclavian artery stenosis was first described by Bachman and Kim in [6]. It is less invasive, has lower complication rates, and has a shorter hospital stay than surgical treatment. Both the immediate and the long-term results after percutaneous balloon angioplasty are excellent [7, 8], especially with the use of stents [9]. Although surgical treatment remains feasible, percutaneous revascularization is now the treatment of choice in the management of subclavian steal syndrome [10].

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