Claudication pain in the left arm of a coronary artery bypass graft patient using crutches: Coronary subclavian steal syndrome – a case report

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A 77-year-old male former smoker with hypercholesterolemia and diabetes, who underwent coronary artery bypass graft surgery three years before admission and right carotid endarterectomy four years before admission, presented with recent-onset exertional chest pain. His medical history revealed that the chest pain was preceded by gradually worsening exertional claudication pain in his left arm when he was using crutches. The chest pain was similar to the pain

he experienced before the coronary artery bypass graft surgery was performed. Coronary angiography and bypass graft imaging showed significant stenosis of the left subclavian artery proximal to the origin of the left internal mammary artery bypass, decreased flow in the left internal mammary artery with partial retrograde filling from the left anterior descending artery, and severe narrowing of the left vertebral artery with preserved centrifugal flow. Percutaneous stent implantation into the left subclavian artery was performed together with proximal balloon angioplasty of the left vertebral artery. The patient has been symptom free since the stent implantation.

Key Words: Angina; Steal syndrome; Stent

CASE PRESENTATION

A 77-year-old male former smoker with hypercholesterolemia and diabetes, who underwent coronary artery bypass graft (CABG) surgery three years before admission and right carotid endarterectomy four years before admission, presented with recent-onset exertional chest pain. His medical history revealed that the chest pain was preceded by gradually worsening exertional claudication pain in his left arm when he was using crutches. The chest pain was similar to the pain he had experienced before the CABG was performed. On admission, electrocardiography, echocardiography and laboratory studies (including serum glucose, serum lipids and high-sensitivity C-reactive protein) were unremarkable except for elevated total and low-density lipoprotein cholesterol (5.9 mmol/L and 3.24 mmol/L, respectively). A clinical examination showed a difference in blood pressure of 20 mmHg between his right and left arms. Coronary angiography and bypass graft imaging showed significant stenosis of the left subclavian artery proximal to the origin of the left internal mammary artery (LIMA) bypass (Figure 1), decreased flow in the LIMA with partial retrograde filling from the left anterior descending artery (Figure 2), and severe narrowing of the left vertebral artery with preserved centrifugal flow. The other two bypass grafts maintained good flow. Subsequently, percutaneous stent implantation into the left subclavian artery was performed together with proximal balloon angioplasty of the left vertebral artery (Figure 3). Clopidogrel was added to the patient's usual medication, which included acetylsalicylic acid, spirapril, amlodipine, furosemide, simvastatin and gliquidone. The patient has been symptom free since the stent implantation.

Figure 1 Left subclavian artery imaging. Significant stenosis (cross) proximal to the origin of the left internal mammary artery (arrow) and the vertebral artery (arrowhead)

DISCUSSION

Left subclavian artery stenosis (SAS) proximal to the LIMA bypass (1) may be suspected in patients with claudication pain in the left arm and recent-onset exertional chest pains after

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Figure 2) Coronary angiography. Partial retrograde filling of the left internal mammary artery through the native left anterior descending artery (arrows)

CABG, particularly in patients with peripheral artery disease (2) and a pressure gradient of greater than 15 mmHg between the left and right arm (3). SAS should be considered during angiography because, in such cases, the patient can be treated with proximal left subclavian artery stenting with low risk and excellent outcomes (4). Moreover, cerebral symptoms or syncope could also occur in the presence of a patent vertebral artery and subclavian steal syndrome. (They were not apparent in the present case.)

SUMMARY

We report a patient with suspected coronary subclavian steal syndrome at the time of presentation. Angiographic imaging

Figure 3) Left subclavian artery imaging. No residual stenosis in the left subclavian artery after stent implantation. Diffusely narrowed left vertebral artery after proximal balloon angioplasty

confirmed proximal SAS and the patient was treated with subclavian artery stenting with immediate effect.

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