Unstable Angina as a Result of Coronary-Subclavian Steal Syndrome

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A 75-year-old man was transferred to our department from the local hospital because of recurrent episodes of dyspnea and angina at rest, with significant 3.0-mV ST-segment depressions in ECG leads V_{3} through V_{6}. His medical history was significant for coronary artery disease, 2-vessel coronary artery bypass grafts (1999), nondisabling stroke (2004), type 2 diabetes mellitus, hypertension, and peripheral vascular disease. The patient also complained of dizziness and weakness of the left hand. Clinical examination was characterized by lack of radial pulse, and blood pressure could not be measured on the left arm. The echocardiogram showed apex and inferior wall hypokinesis with slightly diminished ejection fraction (50%).

Ultrasound examination revealed occlusion of the left internal carotid artery and reversed flow through the left vertebral artery, confirmed by angiography (Figure 1). Symptomatic vertebral-subclavian steal syndrome was diagnosed.

Angiography of the left coronary artery showed the entire left internal mammary artery (LIMA) graft (Figure 2) with reversed flow of contrast into the subclavian artery. The right and circumflex coronary arteries were occluded, as well as the venous graft to the right coronary artery. Contrast injection into the subclavian artery demonstrated critical 90% stenosis in the proximal part of the subclavian artery, with a translesion pressure gradient of 80 mmHg (Figure 3). Contrast selectively injected beyond the lesion merely showed the proximal parts of the left vertebral artery and LIMA, indicating the presence of reversed flow. Direct stenting of the subclavian artery was performed (Figure 4), and anterograde flow through the left vertebral artery and LIMA was reestablished. Control coronary angiography revealed only minor retrograde filling of the distal part of the LIMA, indicating that the subclavian angioplasty had produced favorable results (Figure 5). At discharge from the hospital, the patient was asymptomatic and the left radial pulse was palpable.

Although subclavian steal syndrome is rather rare, it can be manifested as acute coronary syndrome among patients with LIMA grafts or vertebrobasilar insufficiency, especially in the presence of concomitant internal carotid artery occlusion. Percutaneous angioplasty is the preferred treatment option for those patients.

Disclosures

None.
Figure 1. Contrast injection into the brachiocephalic trunk and reversed flow through the left vertebral artery in late phase. The figure is a composite of 2 images obtained during different phases of the same injection: early- and late-phase contrast filling.

Figure 2. Left lateral projection of the left anterior descending artery indicating reversed flow through the LIMA.

Figure 3. Critical stenosis of the proximal part of the left subclavian artery.

Figure 4. The effect of stenting the left subclavian artery.
Figure 5. Left lateral view of the left anterior descending artery after stenting of the subclavian artery. Only minor retrograde LIMA filling is seen.
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