Severe neurological consequences of subclavian steal in the setting of cardiogenic shock

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DESCRIPTION

A woman in her 70s was found lying prone, with an ST-elevation myocardial infarction and in cardiogenic shock. She was obtunded, answering 'No' to all questions, and was observed to have anisocoria with a pinpoint right pupil, 5 mm left pupil, decreased right corneal reflex and nystagmus. Head CT scan was unremarkable, but CT angiogram of the chest demonstrated an occluded left subclavian with reconstitution proximal to the left vertebral artery origin (figure 1 and video 1). Her neurological deficits were thought to be attributable to reduced cardiac perfusion of a cerebral circulation made tenuous by subclavian steal physiology.

Subclavian steal syndrome occurs when proximal stenosis or occlusion of the subclavian artery

Video 1 CT images reviewed.

Figure 1 CT angiography demonstrating calcification and occlusion of proximal left subclavian artery (blue arrow) at its origin with reconstitution prior to vertebral artery origin. Axial (A), coronal (B) and sagittal (C) views presented.

decreases flow and pressure beyond the point of obstruction. This causes retrograde flow in the ipsilateral vertebral artery.¹ In partial steal, flow remains antegrade in diastole but becomes retrograde during systole, and in complete steal, flow remains retrograde throughout the cardiac cycle.² It is typically caused by atherosclerosis, and prevalence estimates range between 0.6% and 6.4%.³ Most cases are left-sided and benign, with symptoms occurring in only 7.4% of patients in one series.² Symptoms result from ischaemia and may be neurological in vertebrobasilar ischaemia (vertigo, diplopia, ataxia, drop attacks), musculoskeletal in limb ischaemia (claudication, paraesthesias, weakness) or cardiac in the setting of retrograde graft blood flow after coronary artery bypass grafts from left internal mammary artery (angina, arrhythmias).³ A common physical finding is that of a >20 mm Hg blood pressure difference between limbs.^{2,3} Treatment is typically medical, but symptomatic cases may be treated surgically or endovascularly.¹

Learning points

- ▶ Subclavian steal can result in vertebrobasilar ischaemia.
- ▶ Most cases of subclavian steal are asymptomatic and do not require more than medical intervention to optimise atherosclerosis risk factors.
- ▶ As large areas of the brain are dependent on tenuous collateral circulation in subclavian steal, the neurological consequences of impaired circulation may be severe.

Competing interests None declared.

Patient consent Not obtained.

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