Dramatic event after acute ischaemic steal syndrome following arm arteriovenous fistulae

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Keywords: arteriovenous fistulae; ischemia; steal syndrome

A 74-year-old man with hypertension and peripheral vasculopathy history was admitted to our hospital to start renal substitutive treatment with haemodialysis through a functioning right humeral-cephalic arteriovenous fistula. In the first week after starting haemodialysis, the patient presented signs of distal ischaemia in the second and third fingers. A fistulography confirmed distal steal by arteriovenous fistulae without distal perfusion of palmar arch, even with the fistula occlusion manoeuvre (Figure 1). We decided to close the fistulae, and we implanted a tunnelized jugular catheter for haemodialysis. After fistula ligation, the pain decreased, but 5 days later, the ischaemic lesions progressed involving the first and fourth fingers, and a palmar ulcer appeared (Figure 2). Finally, amputation of the hand was required.

Arteriovenous fistula in the arm is commonly related to physiological steal with a reverse flow in the artery distal to the fistula. This change in the blood flow of the extremity can lead to distal ischaemia; however, hand ischaemia or infarction is rare. The ischaemic steal syndrome is usually a result of arterial disease proximal or distal to the fistula. It is manifested by pain, weakness, pallor, and, in severe cases, ulceration and tissue loss. Severe ischaemia, requiring reintervention, has an incidence of 4%, although some degree of ischaemia-causing pain or paresthesias occurs in 10–20% of patients following access construction [1]. Pathophysiology may be on the basis of inadequate arterial collateral inflow due to occlusive disease, particularly involving the medium-sized vessels, or high flow in a fistula exceeding the inflow capacity in the absence of intrinsic occlusive disease of the inflow arteries [2]. Operative techniques for correcting steal include arteriovenous fistula ligation, percutaneous transluminal angioplasty, banding or restrictive procedures, and distal revascularization interval ligation [3,4]. Intervention for ischaemic steal syndrome successfully resolves ischaemia in 80–95% of patients, and although fatal outcomes are rare, these can occur as was the case in our patient.

Conflict of interest statement. None declared.

References


Received for publication: 14.4.10; Accepted in revised form: 18.5.10
Fig. 1. Fistulography showing a poor palmar arch perfusion.

Fig. 2. Severe ischemia of the right hand due to steal by the arteriovenous fistulae.