Autogenous arteriovenous fistula for hemodialysis complicated with a giant venous aneurysm

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Citation

Abstract
We describe a case of autogenous arteriovenous fistula for hemodialysis complicated with a giant venous aneurysm.

CASE REPORT
Our patient was a 57-year-old man. He was under continuous hemodialysis program for chronic renal insufficiency for 9 years. There has been a right brachiobasilic fistula created 7 years ago. He was suffering from a progressively swelling for 1 month in the fistula region (Figure 1).

Figure 1
Figure 1

Color Doppler ultrasonography revealed a dysfunctioning fistula -created between right brachial artery and cephalic vein- due to severe constriction. Moreover, there was a giant aneurysmal dilation on the venous component of the fistula observed. Afterwards, a fistulographic investigation with digital subtraction angiography (DSA) was carried out. It revealed a constriction at the level of anastomosis between distal right brachial artery and cephalic vein (Figure 2).

Figure 2
Figure 2

A giant aneurysm on the venous component of the fistula was observed(Figure 3).
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Central veins of this arm were shown to be patent (Figure 4).

He was operated under elective axillary block and local anesthesia. An incision on the previous one's scar was made. Anastomosis site of the brachiocephalic fistula was explored. Brachial artery was suspended at segments proximal and distal to the anastomosis site. Cephalic vein was also explored and suspended (Figure 5).

Cephalic vein was transected at 0.5 cm proximal to the anastomosis site. Aneurysmatic sac was emptied through cephalic vein. Brachial artery was repaired with 5/0 polypropylene suture material (Figure 6).

Postoperative period was event-free. During his follow-up visits, venous aneurysm was shown to have totally regressed. All the pulses of the right upper extremity were palpable (Figure 7).
Arteriovenous (AV) fistulas are crucial in patients requiring long-term hemodialysis (HD)(1). The Dialysis Outcomes Quality Initiatives guidelines emphasize placement of autogenous arteriovenous (AV) fistulae for patients on hemodialysis. This recommendation is based on studies that demonstrate enhanced patency for AV fistulae compared with grafts. Review of the data demonstrates also that although primary patency of AV fistulae is superior to grafts(2).

Dysfunctions of these fistulas are the most common causes of recurrent hospitalizations(1). Complications of vascular access procedures include arterial or venous insufficiency of the hand distal to forearm fistulas, the gradual development of stenosis at the graft suture line and thromboses of fistulas and shunts(3).

Vascular access malfunctions can be diagnosed by means of imaging and non-imaging methods. The former are: ultrasound (US), colour Doppler ultrasonography, arteriography and phlebography. Radiological imaging allows for direct assessment of the morphology and function of the hemodialysis fistula, and shows precisely the kind and location of lesions, that may lead to access failure(4).

In the study of Mennes et al., 100 venous angiograms were performed on 75 patients because of difficulty with vascular access. Venous angiography of the fistula demonstrated significant stenosis in 40% of the cases as well as total occlusion by thrombus in 9%. Definitive diagnosis with the aid of venous angiography permitted specific surgical intervention in 62% of the cases, and identified new sites for needle placement in 18% of the cases, thus prolonging fistula life and reducing the need for new fistula placement(5).

Colour Doppler sonography is a method of choice in evaluation of arteriovenous hemodialysis fistulae. Abnormal results of physical examinations, dialysis parameters, as well as patients complaints associated with the fistula are indications to perform an ultrasound examination. Angiography is required in case of dubious US findings or as the first step in endovascular treatment(4).

Surgical thrombectomy of AV fistulae can be challenging. It is often difficult to completely remove thrombus adjacent to the anastomosis of the fistula. Consequently, some surgeons simply abandon thrombosed AV fistulae and place a new access(2).

As conclusion; the autogenous arteriovenous fistulae have good primary and secondary patency rates with lower rates of infection than prosthetic fistula making them a preferred secondary access procedure(6). Careful management of these complications is important both in preserving the access site, when possible, and in avoiding unnecessary sequelae related to vascular insufficiency of an extremity(3).

References
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