Letter to Editor

After three years the patient underwent an inferior limb angiography for critical limb ischemia. At the end of the procedure, a control angiography of the right forearm via the femoral access was performed. It showed excellent angiographic result three years from the index DEB-PTA (Fig. 3D).

First use of drug-eluting balloon for below-the-elbow artery occlusion in a hemodialysis patient: a 3-year follow-up

Editor,

Critical hand ischemia (CHI) caused by chronic occlusive arterial disease is a rare but disabling disease (1). It has been shown that percutaneous transluminal angioplasty (PTA) of below-the-elbow (BTE) vessels for CHI is a feasible and safe procedure (2). On the other hand, the introduction of drug-eluting balloon (DEB) to reduce restenosis in PTA appears promising (3). Unfortunately, there are very few data available together with no long-term result in this setting.

A 52-year-old man with diabetes and end-stage renal disease in hemodialysis, presented to our clinic for a necrotic lesion of the right forefinger and pain at rest (Fig. 1A). He had an active distal radio-cephalic arteriovenous fistula (AVF). An angiography via antegrade brachial approach by means of a 4-F sheath revealed a long occlusion of the ulnar artery and good patency of the radial artery and the AVF (Fig. 2A). The occlusion was crossed with a 0.014" wire (PT2, Boston Scientific, MA, USA) and PTA with a long balloon (diameter 2.5/3.0-210 mm, conic shape, 15 atm, Amphyrion Deep, Medtronic Invatec, Italy; Fig. 2B) was performed yielding optimal final angiographic result (Fig. 2C). The forefinger lesion completely healed at 30 days (Fig. 1B). At three months the ulnar pulse slowly disappeared and the patient complained of finger pain. Angiography showed a diffuse restenosis of the ulnar artery (Fig. 3A). A pre-dilatation with a 2.0 mm diameter balloon was performed followed by paclitaxel-eluting balloon PTA with 2.5 x 80 mm and 3.0 x 80 mm balloons (In.Pact Amphyrion, Medtronic Invatec, Italy; Fig. 3B) with excellent final angiographic result (Fig. 3C). The patient took double antiplatelet therapy for one month and he regularly continued hemodialysis from AVF. Scheduled clinical and Duplex scan at 1, 3, 6, 12 and 24 months showed good vessel patency.

Fig. 1 - A. Necrotic lesion of the right forefinger; B. complete healing at 30 days.

Fig. 2 - A. Basal angiography; B. Long uncoated balloon inflation; C. Acute result.

Fig. 3 - A. Three-month diffuse restenosis; B. DEB treatment; C. Acute result after DEB treatment; D. Angiographic follow-up at 33-months.
Drug eluting balloon for below-the-elbow arteries

Despite advances in PTA techniques and devices, restenosis remains one of the most important therapeutic challenges (3). The concept of delivering an antirestenotic drug by means of a DEB at the site of arterial disease and maintaining vessel anatomy and physiology appears of paramount interest. Few recent studies have shown the advantages of DEB versus uncoated balloon PTA in treating infra-inguinal arteries (3-5). Nevertheless the overall number of patients treated with DEB is low and available data on angiographic follow-up do not exceed 12 months.

Our case is the first showing an optimal very long-term result of DEB-PTA for restenosis in the setting of a particular vascular territory, BTE vessels. It highlights the potential long-term beneficial effects of DEB in hand vessels and its advantage over uncoated balloons. The long-term ulnar patency determined not only an ischemia-free clinical follow-up but spared AVF for further dialysis.

Future studies are needed to better address DEB use in BTE-PTA.

Conflict of interest: None.

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REFERENCES