

Macroangiopathy in Systemic Sclerosis and Downstreamed Revascularization Material

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Medical History

An 71 year - old female patient with new onset of pain in the right calf after a walking distance of 150 meters and development of an ulcer of the forth toe of the right foot presented to our angiology department. She had no cardiovascular risk factors and suffers from a systemic sclerosis (initial diagnosis 2014).

Clinical presentation

The foot pulses were not palpable on both sides with palpable popliteal-, and inguinal pulses. The ankle - brachial- index (ABI) was reduced on the right side at rest (0.77) with significant reduction after performing 30 squats (0.35), on the left side the ABI was normal, vascular ultrasound at that time showed open femoro-popliteal arteries. Within four weeks new ulcers continued to develop (third and fifth toe right side), followed by necrosis in the lesions.

Performing another vascular ultrasound in follow up we diagnosed a new occlusion of the right popliteal artery (Figure 1)

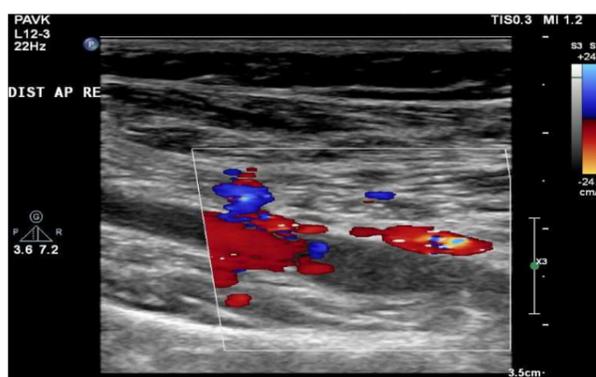


Figure 1
Sonographic based detection of occluded popliteal artery on the right side

Treatment and development

We performed percutaneous transluminal angioplasty (PTA) of the right popliteal artery (Figure 2). After this we still measured a reduced toe pressure (41mmHg) and a sonographically 75 - 99% persisting stenosis at the right popliteal artery and we performed a second PTA, this time with a Supera - Stent implantation.

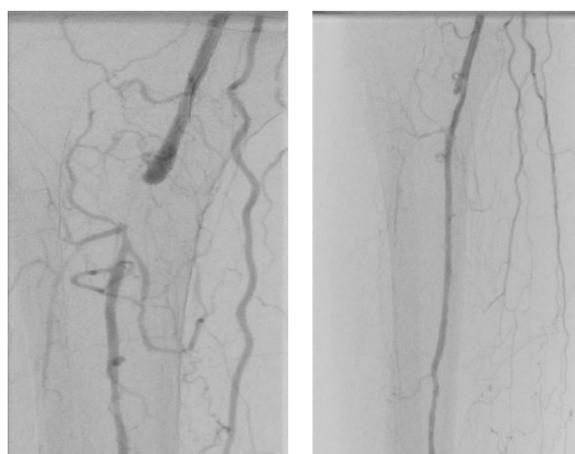


Figure 2
Angiography of the right popliteal artery before (left side) and after (right side) revascularization

After the intervention, we saw a recanalized popliteal artery, with a normal ABI and normal segmentoscillography curves.

Unfortunately the patient developed osteomyelitis of the fourth and fifth toe of the right foot which had to be amputated.

The amputation material was sent in for histologic analyses and we were surprised to state that presumably downstreamed embolization material was found in the small vessels of Dig V (Figure 3).

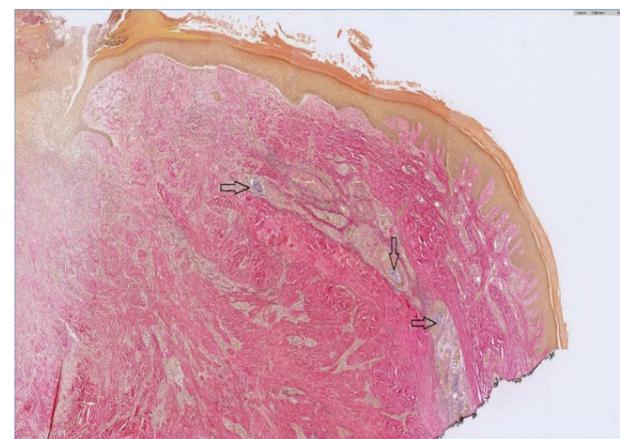


Figure 3
Histology of Dig. V: presumably downstreamed embolization material in the small vessels (arrows)

Discussion

Systemic sclerosis is an independent risk factor for development of arteriosclerosis and pAVK (1). As in our patient, systemic sclerosis resulted in a pAVK stadium IV with peripheral ulcers in the absence of the classical risk factors. Microangiopathy is sometimes seen in patients with systemic sclerosis, whereas in our patient we also found macroangiopathy with occlusion of the popliteal artery, which is untypical for the disease.

Regarding the embolized material, we conclude that there was a downstreaming embolization related to our revascularizations. It is nevertheless not possible to differ if the material comes from the supra stent itself or from the - not drug eluted - intervention balloon.

The incidence of distal embolization as determined by angiographic or clinical manifestations has been estimated to range from 4% to 5% for peripheral interventions. However, the true incidence of asymptomatic embolization is likely higher (2).

Downstream embolization might therefore be a much more common problem related to PTA, whenever it remains mostly clinically unapparent.

Literature

- 1) Systemic sclerosis is an independent risk factor for increased coronary artery calcium deposition; Mo Yin Mok et al, Arthritis and Rheumatology, 28.04.2011
- 2) Incidence and clinical significance of distal embolization during percutaneous interventions involving the superficial femoral artery, Russel C. Lam et al, Journal of Vascular Surgery Volume 46, Issue 6, December 2007, Pages 1155-1159