Is non-functional microcirculation the same as flow-independent ischemia?

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Disclosure

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case

• Female 84 years old.
• Diabetes type 2
• Non-healing ulcer at left forefoot stump
• Earlier lower limb amputation right leg.
• Low grade infection in ulcer.
• Polyneuropathy
Follow-up

- ABI from not measurable to 0.7

4 months:
- Amputation due to progressive infection
- ATA patent on duplex
(New) definition of Critical limb ischemia (CLI)

Shortage of oxygen in the tissue = CLI

- Inflow problem
- Microcirculation problem
Inflow problem

- Occlusive disease.

This can be treated with revascularization and >90% **good** outcome.
The occlusion can be treated with revascularization but with >90% poor outcome.
Microangiopathy:

Etiology: Genetic diabetes mellitus, High capillary pressure

- Damaged capillaries
- Leakage
- Deposits of hyaline thickening
- Thickening of the capillary basement membrane
Dysfunctional sympathetic nervous system in the foot is a strong predictor for early amputation. (<12 M)

Dysfunctional sympathetic nervous system is related to microangiopathy
A: patients with functional sympathetic nervous system (N=20)

B: patients with dysfunctional sympathetic nervous system (N=11)

Kaplan-Meier curves for amputation-free survival at 12 months (log rank p < 0.001; HR 14.22 95%CI: 3.64-55.51).
23 patients did undergo angioplasty.
8 patients did not undergo angioplasty

Kaplan-Meier curves of amputation-free survival in patients who did undergo angioplasty and in patients who did not undergo angioplasty (log rank p = 0.407; HR 0.65 95%CI: 0.22-1.94).
Conclusion

• Non-functional sympathetic nervous system in the foot, measured with perfusion angiography, in patients with a neuropathic diabetic ulcer is a parameter for microangiopathy.

• Successful revascularization with improvement of inflow to the foot, in patients with non-functional sympathetic nervous system, does not improve the (poor) outcome.

Therefore: Microangiopathy is the same as flow-independent ischemia.
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