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Is ankle-brachial pressure index sufficient test for indication of percutaneous transluminal angioplasty in patients with diabetic foot ulcers?

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Background: The decision to perform vascular intervention is often based on Doppler ankle/brachial index (ABI). The ABI <0.9 indicates peripheral arterial disease (PAD) according to International Consensus on the Diabetic Foot but medial arterial sclerosis may be the confounding factor of this cut-point. The relationship between ABI prior to percutaneous transluminal angioplasty (PTA) and PTA outcomes is not proved enough. The aim of our study was to compare short- and long-term effect of PTA between diabetic patients with ABI ≥ 0.9 and with ABI <0.9 . **Patients and methods:** The retrospective study was conducted to evaluate 49 lower limbs in 47 diabetic patients (Type1/Type2 DM 9/38, mean age 63 ± 15 years, mean diabetes duration 20 ± 11 years) treated at a diabetic foot clinic for diabetic foot syndrome (DFS) during the period of 2005-2007, in which non-invasive vascular assessment was documented. The mean follow up period was 10 (6-12) month. Indication for PTA were non-healing diabetic foot ulcers. In the first group lower limbs with ABI ≥ 0.9 were included, in the second group lower limbs with ABI < 0.9 were included. The evaluation of short-term effect of PTA was based on transcutaneous oxygen tension (TcPO₂) measurement before and 3-6 days after PTA; evaluation of long-term effect was based on clinical observation: positive effect was defined as ulcer closure or below-the ankle amputation healed and healing failure was defined as non-healed ulcer or above-the-ankle amputation. **Results:** In the first group (ABI ≥ 0.9) 23 lower limbs with mean ankle pressure 172 ± 35 mmHg and mean ABI $1,26 \pm 0,24$; in the second group (ABI <0.9) 26 lower limbs with mean ankle pressure 83 ± 29 mmHg and mean ABI $0,58 \pm 0,19$ were evaluated. Using Wagner classification both groups were comparable as to severity of lesions. Both groups didn't differ significantly in the mean TcPO₂ before the PTA (23.1 ± 15.9 vs 23.6 ± 16.3 mmHg, NS). There was significant increase of TcPO₂ after PTA both in the first ($\Delta 12.9 \pm 18.4$ mmHg, $p=0.0035$) and the second group ($\Delta 13.9 \pm 13.9$ mmHg, $p<0.001$) with no significant differences between both groups. No significant difference between first and second group in clinical outcomes during the follow up period was observed: ulcer healing in 18/23 vs 17/26 (78% vs 65%, NS) and healing failure in 5/23 vs 9/26 (22% vs 35%, NS). **Conclusions:** Our study demonstrated no significant differences in short-term and long-term effect of PTA between patients with ABI ≥ 0.9 and in patients with ABI < 0.9 . We concluded, that ABI is not sufficient criterion for PTA indication in patients with non-healing diabetic foot ulcers and ABI ≥ 0.9 cannot exclude positive effect of PTA on ulcer healing. This study was supported by grant MZO 00023001 from the Ministry of Health of the Czech Republic.