

Comparison of Ultrasonographic and Angiographic Morphologic Findings According to Graziani Classification in Diabetic Foot Patients

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Background and aims: Non-invasive assessment of peripheral arterial disease (PAD) in non-healing diabetic foot ulcer (DFU) patients is very important. Duplex Ultrasonography (DUS) is easy available and widespread method of non-invasive PAD detection in Czech Republic. Other non-invasive vascular tests as Doppler Ankle Brachial Index, plethysmography or transcutaneous oxygen pressure (TcPO₂) are available mainly in specialised centres. The aim was to evaluate DUS and subsequent angiography (AG) findings positive for PAD using the equal morphologic criteria and then compare the agreement of both methods.

Methods: We included 32 consecutive patients with non-healing DFU and clinical suspicion of PAD (mean age 67.6 ± 10.3 years, 25 % females, 94 % of type 2 diabetes, mean duration of diabetes 16.3 ± 11.9 years, mean glycated haemoglobin 90 ± 32 mmol/mol, 53 % active smokers). DUS was examined in the beginning of the follow-up by experienced angiologist. PAD was verified by AG in 30/32 (94 %) patients; in these subjects positive AG findings were categorised into 7 classes in accordance with the Graziani Morphologic Classification. For the purpose of this study, ultrasonographic findings were classified analogically using the same morphologic criteria. The concordance / discordance between DUS and real AG finding was studied and statistically evaluated. **Results:** According to Graziani Morphologic Classification, two most common AG classes were Class 4 (30 %) and Class 6 (22 %). Regarding DUS, findings analogous to Graziani Class 4 (23 %) and Class 1 (20 %) were the two most common. Comparing the agreement of DUS and AG findings in accordance with Graziani, we found 52 % concordant pairs and 48 % discordant pairs. We observed no agreement between the methods ($\kappa = -0,25$). In a subgroup of discordant pairs, in 69 % subjects DUS finding was less serious than real AG and in 31 % subjects DUS finding was more serious than real AG. **Conclusion:** The study demonstrated discordance between DUS and angiographic findings in diabetic foot patients with PAD. Among discordant pairs, DUS finding was undervalued as less serious in approximately 2 thirds of patients and overvalued as more serious in 1 third of patients. The results indicate, despite easy availability of DUS (at least in Czech Republic), the importance of using wider spectrum of non-invasive vascular assessment methods (as TcPO₂ etc.) in clinical practice in diabetic foot patients. Supported by: grant MO 0901-8-8140.