

Duplex scanning compared with digital subtraction angiography in verification of peripheral arterial disease in diabetic patients.

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Background: The aim of this study was to assess the diagnostic value of duplex scanning (DS), as compared with contrast angiography (CA) and necessity of improvement of the degree of DS technique in diagnosis of lower limbs peripheral arterial disease in diabetic patients. Materials and methods: From April 2008 to February 2010 121 diabetic patients (mean age 65 ± 17 years; male/female 47/53%; Type 2 DM 92%; mean DM duration 17 ± 10 years) admitted to Diabetic Foot Department suspicious for limb ischemia. 60% of patients had foot ulcers; 44% had intermittent claudication; 13% of patients had no neither an ulcer nor a rest pain. All patients underwent DS of peripheral arteries. The lower limb arterial axis was divided into 15 segments and graded on the basis of the degree of stenosis and/or occlusion. Agreement between CA and DS was assessed by Cohen's kappa statistics (kappa). The sensitivity and specificity of DS in detecting significant stenosis at angiography ($\geq 70\%$) were also calculated and estimated initially and at least one year after. (62 consecutively admitted patients at the beginning of the study, group A and remained 59 patients at the end of the study, group B). Results: Duplex procedure time averaged 60 ± 30 min. There were 483 hemodynamic relevant lesions diagnosed: 7 (1.4%) in iliac trunk, 94 (19.5%), in femoral artery, 70 (14.5%) in popliteal artery, 312 (64.6%) in tibial/peroneal arteries. Occlusions of tibial/peroneal arteries were found in 74%. In group A 202 lesions (88%) and in group B 240 (95%) predicted by DS and were confirmed by CA at the time of surgery. Additional lesions were revealed by intraoperative arteriography in 28 cases (12%), group A and in 13 cases (5%), group B. The accuracy and sensitivity of duplex scanning in the selection of aorto-iliac lesions for endovascular procedures was 86%, 91% for femoro-popliteal lesions, and 78% for infrapopliteal lesions in group A and 88%, 93%, and 89% in group B, respectively. N=49 patients (63%) group A were underwent CA and subsequent peripheral transluminal angioplasty (PTA). In N=29 patients (37%) group B was performed endovascular revascularization based on DS. Conclusion: The sensitivities and specificities suggested various duplex reliabilities in detecting significant arterial disease across different lower limb segments. The most of the diabetic patients had multisegmental type of lesions with prevailing of occlusions in infrapopliteal axis. The results of this study show that DS may be a safe alternative to CA for patients with chronic limb ischemia if performed by skilled and experienced specialist. It is necessary to reduce the rate of side effects and complications associated with CT in diabetic patients.