New potentialities of digital optical capillaroscopy for early diagnostics of arterial hypertension and type 2 diabetes mellitus

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AIM: The aim was to evaluate the digital nailfold capillaroscopy (DNC) potentialities for quantifying microvascular abnormalities in patients with Arterial hypertension (AH) and Type 2 diabetes mellitus (T2DM).

METHODS: The study involved 319 adults including 40 patients with prehypertension (PH), 36 patients with AH (mean systolic BP 153±12 mm Hg), 47 treated patients with AH, 52 patients with compensated T2DM, 68 decompensated diabetics, and 76 healthy volunteers (HV). All underwent DNC using a fast CCD-camera and image-processing software allowing for quantifying the diameters of the arterial and venous segments of capillaries, coefficient of remodeling (CR), capillary blood velocity (CBV), capillary network density (CND), etc.

RESULTS: Significant narrowing of arterial loops was revealed in patients with both AH and PH in comparison with HV. CBV in patients with AH was significantly lower in comparison with HV. The study revealed significant difference in CND and CR in comparison of T2DM patients with non-diabetic individuals. Significant changes were found in the decompensated T2DM group compared to the compensated group of diabetic patients.

CONCLUSIONS: DNC reinforced with the advanced image-processing algorithm opens up new possibilities for obtaining clinically important information on microvascular abnormalities in patients with AH and T2DM.

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