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Ultrasonic imaging of radial artery reactive response in patients with hypertension with and without left ventricular hypertrophy

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Background: Endothelium plays an important role in anti-inflammatory process and regulating vascular tone.

It has been shown in numerous studies that increase of vessel dilation after several minutes hyperemia, was induced by mechanical transient flow stimulation of the endothelium. Most of the reported research experiments were conducted on the brachial artery. We proposed to measure the flow-mediated dilation in the radial artery (FMDr) in patients with hypertension (HT). In order to improve the axial resolution affecting the precision of FMDr determination, radial artery imaging was performed using a high frequency 20 MHz ultrasound.

Aim: The aim of the study was assessment of FMDr in patients with HT using 20 MHz probe.

Methods: Our studies involved two groups: group I consisted of 76 pts. 35 men and 41 women (71 ± 5.6 yr. old); with documented HT and group II consisted of 16 healthy volunteers, 12 men and 4 women (51.4 ± 9.4 yr. old). We divided patients with HT in to three subgroups: IA - 25 pts. with HT and left ventricular hypertrophy (VH), IB - 26 pts. with HT without VH, and IC patients with HT without VH but with coexisting coronary artery disease (CAD).

Results: Statistically significant differences in FMDr between the two groups were confirmed by a Wilcoxon-Mann-Whitney test. In group II FMDr was $11.9 \pm 4.8\%$, and in group I FMDr was significantly less at $5.1\% \pm 4\%$. We have not observed any statistical differences in FMDr between groups: IA and IB (5.05% , 5.55%) respectively. We calculated FMDr for IC 4.21% ($p = 0.018$). Fig. 1.

Conclusion: The results confirm the usefulness of the proposed measurements of radial artery FMDr to differentiation of normal subjects from those with documented HT. There are no significant differences between males and females in all considered groups of subjects. We did not find the differences in FMDr between patients with and without VH. Patients with HT, without VH and with coexisting CAD had the lowest reactive response of FMDr.

Abstract P1833 Figure. Fig. 1

