

EFFECT OF OBESITY AND DIABETES MELLITUS TYPE 2 ON VASCULAR STIFFNESS

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OBJECTIVES

To investigate the impact of overall obesity (Ob) and diabetes mellitus type 2 (DM2) on arterial stiffness and degree of insulin resistance in patients with arterial hypertension (AH) and abdominal obesity (AOb).

METHODS

74 subjects were divided according to presence of AH, AOb, Ob and DM2 without insulin therapy. Control group 1 consisted of 26 subjects without AH, AOb, Ob and DM2. All patients with AH were also diagnosed with AOb and amounted to 48 subjects. Then patients with AH and AOb were divided into two groups (group 2 and 3 respectively) according to presence of Ob, defined by BMI and furthermore, DM2. Carotid-femoral pulse wave velocity (PWVc-f) measurements were performed using SphygmoCor. Homeostasis model assessment-insulin resistance (HOMA-IR) was calculated by the following formula: fasting plasma insulin (mU/ml) x fasting plasma glucose (mmol/l)/22.5.

RESULTS

Results In the group comparison by BMI: PWVc-f and HOMA-IR increased consistently from Group 1 to Group 3. PWVc-f was significantly higher in hypertensive patients with AOb and Ob than in hypertensive patients with AOb and without Ob (PWVc-f=8,69±1,8; PWVc-f=7.43±1,3; p<0.05). HOMA-IR did not show significance. In the group comparison by presence of DM2: PWVc-f and HOMA-IR increased consistently from Group 1 to Group 3. PWVc-f and HOMA-IR were significantly higher in hypertensive patients with AOb and DM2 than in hypertensive patients with AOb and without DM2 (PWVc-f=9.5±1.8 and PWVc-f=7.71±1.5, p<0.001; and HOMA-IR=7.09±3.54 and HOMA-IR=2.83±1.2; p<0.001). Significant differences between groups persisted after adjustment for age, sex and BMI.

CONCLUSIONS

Conclusions Presence of overall Ob together with AOb had a significant adverse effect on arterial stiffness in patients with AH both men and women. This adverse effect is similar with impact of DM2 on arterial stiffness in patients with AH together with AOb. Measurement of PWVc-f showed higher significance versus HOMA-IR measurements in the study groups.

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