PULSE PRESSURE AND PULSATILE STRESS IN OVERWEIGHT/OBESE NONHYPERTENSIVE PATIENTS WITH VERSUS WITHOUT TYPE 2 DIABETES.

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BACKGROUND

Arterial pulse pressure (PP) is an independent cardiovascular risk factor in patients with type 2 diabetes mellitus (T2DM). We compared PP and PPxHR (heart rate) double product (an indicator of "pulsatile stress") during an active orthostatic test in patients with T2DM and in nondiabetic individuals matched for age (40-60 years), body mass index (BMI) and gender (sex ratio 1/1).

PATIENTS & METHODS

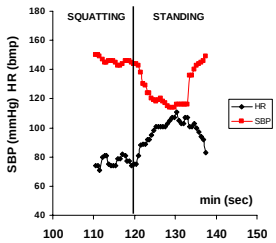
• 40 patients with T2DM (mean age 50 years, diabetes duration 8 years, BMI 29.7 kg/m²), without renal insufficiency or treated hypertension, were compared to 40 nondiabetic subjects (50 years, BMI 28.6 kg/m²).

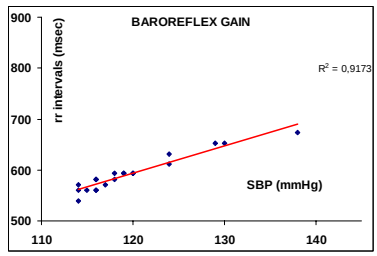
• All patients were evaluated with a continuous arterial blood pressure monitoring (Finapres®) during a 3-phase 3-min postural test

« Squatting » test :
Standing - squatting - standing

Pulse pressure PP (SBP - DBP), and heart rate (HR) were monitoring using a FINAPRES® device

• Baroreflex sensitivity was measured by analysing the relationship between HR and systolic blood pressure (SBP) changes during the transition from squatting to standing.



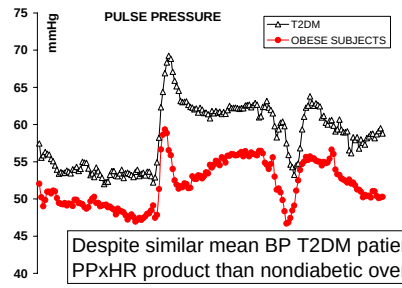


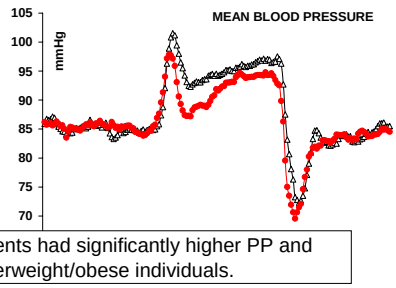
• Baroreflex gain : slope of the regression line relating R-R intervals to SBP changes

• Considered as a marker of cardiovascular autonomic neuropathy (CAN)

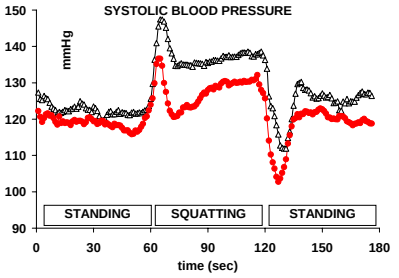
RESULTS

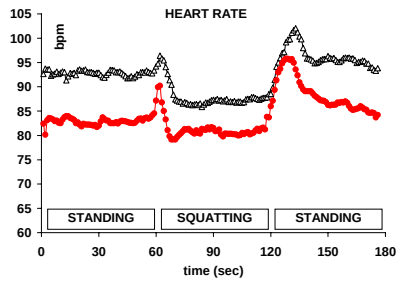
Changes of PP , MBP, SBP and HR during a squatting test

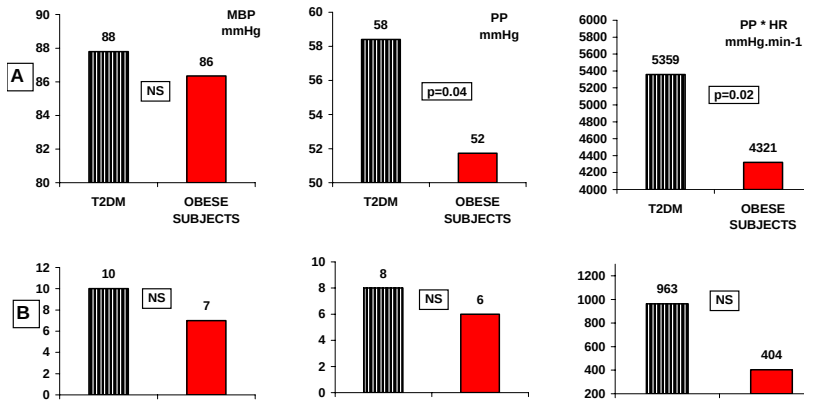




Despite similar mean BP T2DM patients had significantly higher PP and PPxHR product than nondiabetic overweight/obese individuals.

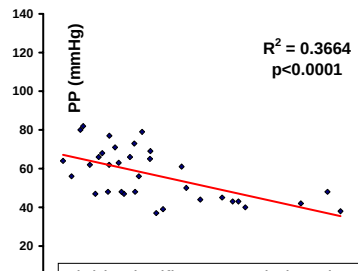




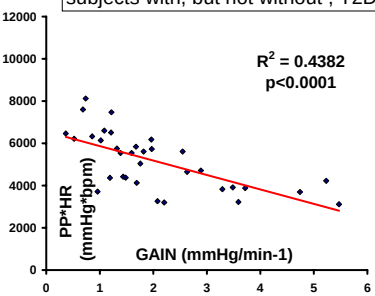


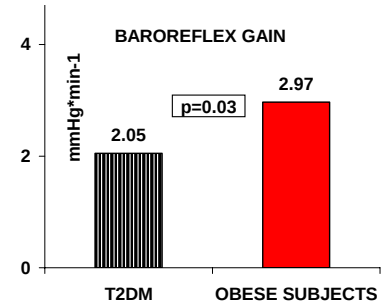
A : Mean values during the whole test **B** : Changes from standing to squatting

Correlation pulsatile stress *vs* BR gain



Highly significant correlations in obese subjects with, but not without , T2DM





•T2DM patients had also lower baroreflex gain reflecting mainly decreased maximal post-squatting orthostatic tachycardia (+13 vs +21 bpm, p<0.001).

CONCLUSION :

Patients with T2DM have higher PP, an indirect marker of arterial stiffness, and higher PPxHR double product, an index of pulsatile stress, than nondiabetic overweight/obese patients, as well as markers of cardiac autonomic neuropathy, which all may contribute to the higher cardiovascular risk associated with T2DM.

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