SIMILAR PULSE PRESSURE AND SYTOLIC BLOOD PRESSURE X HEART RATE DOUBLE PRODUCT IN MIDDLE-AGE PATIENTS WITH TYPE 1 DIABETES AND WITH TYPE 2 DIABETES.

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Background :
Arterial pulse pressure (PP) is considered as an independent cardiovascular risk factor in both patients with type 1 (T1DM) and type 2 (T2DM) diabetes mellitus. We compared systolic blood pressure (SBP), PP and SBP x heart rate (HR) double product during an active orthostatic test in patients with T1DM and patients with T2DM matched for age (40-60 years) and sex ratio (1/1).

Methods : 40 patients with T1DM (mean age 50 years, diabetes duration 23 years, BMI 23.0 kg/m²) were compared to 40 patients with T2DM (respectively, 50 years, 8 years, 29.7 kg/m²). Patients taking antihypertensive agents or with renal insufficiency were excluded. All patients were evaluated with a continuous noninvasive arterial blood pressure monitoring (Finapres®) in standing (1min), squatting (1min) and again standing position again (1min).

Results : There were no significant differences between T1DM and T2DM patients regarding SBP (126 vs 128 mmHg), PP (59 vs 58 mm Hg) and SBPxHR (11220 vs 11772 mmHg/min). PP increase (+10 vs +8 mmHg) and HR reduction (-6 vs -6 beats/min) during squatting were also similar in both groups.

Conclusion : Patients with T1DM have comparable PP, an indirect marker of arterial stiffness, and SBPxHR double product, an index of cardiac workload, as patients with T2DM at similar mean age of 50 years. The negative influence of much longer diabetes duration might be compensated for by the positive influence of lower BMI and less insulin resistance in T1DM patients, leading finally to comparable cardiovascular risk markers as in T2DM.

	Patients with type 1 diabetes (T1DM)	Patients with type 2 diabetes (T2DM)	P value
N (Male/Female)	20/20	20/20	
Age (yrs)	50 ± 6	50 ± 6	0.8853
Diabetes duration (yrs)	23 ±11	8 ± 7	<0.0001
BMI (kg/m^2)	23.0 ± 2.0	29.7 ± 3.7	<0.0001

	T1DM	T2DM	P
Overall values			
SBP (mm Hg)	126 ± 21	128 ± 20	0.6344
PP (mm Hg)	59 ± 13	58 ± 16	0.7907
HR (bpm)	88 ±13	91 ± 10	0.2374
SBP x HR (mm Hg*min^{-1})	11120 ± 2947	12082 ± 2521	0.1638
Changes during Squatting			
Delta SBP (mm Hg)	13 ± 11	14 ±14	0.8364
Delta PP (mmHg)	10 ± 8	8 ± 11	0.4353
Delta HR (/min)	-6 ± 7	-6 ± 7	0.94.96
Delta SBPxHR (mmHg*min^{-1})	1136± 1270	1236 ± 1440	0.7459

	T1DM	T2DM	LC	OC
N (Male/Female)	20/20	20/20	20/20	20/20
Age (yrs)	50 ± 6	50 ± 6	50 ± 6	50± 6
Diabetes duration (yrs)	23 ± 11	8 ± 7	-	-
BMI (kg/m2)	23.0 ±2.0	29.7 ±2 .7	22.2± 2.6	28.6± 2.7

	T1DM	T2DM	p	LC	OC	p
Overall values						
SBP (mm Hg)	126 ± 21	128 ± 20	0.6344	120± 21	122± 18	0.6577
PP (mm Hg)	59 ± 13 [a]	58 ±16 [a]	0.7907	52 ±15	52 ± 13	0.9680
HR (bpm)	88 ±13 [b]	91 ± 10 [b]	0.2374	80 ±9	84 ± 13	0.2025
SBP x HR (mm Hg*min^{-1})	11120 [b] ± 2947	12082 [b] ± 2521	0.1638	9593 ± 1771	10195 ± 2291	0.4597
Changes during Squatting						
Delta SBP (mm Hg)	13 ± 11 [a]	14 ±14	0.8364	8 ± 7	9 ±11	0.6172
Delta PP (mmHg)	10 ± 8	8 ± 11	0.4353	7 ± 6	8 ± 11	0.3130
Delta HR (/min)	-6 ± 7	-6 ± 7 [a]	0.94.96	-6 ± 6	-2 ± 7	0.2025
Delta SBPxHR (mmHg*min^{-1})	1136 [a] ± 1270	1236 ± 1440	0.7459	601 ± 698	963 ± 1178	0.0991