

PULSE PRESSURE, A MARKER OF ARTERIAL STIFFNESS, INCREASES WITH THE DURATION OF TYPE 1 DIABETES.

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Background and Aims : As increased arterial pulse pressure (PP : systolic *minus* diastolic blood pressure) has recently been proposed as an independent risk factor of cardiovascular disease, we investigated whether the duration of type 1 diabetes is associated with increased PP, independently of age.

Materials and Methods : Three groups of subjects with various durations of type 1 diabetes (≤ 10 yrs : n = 23; 11-20 yrs : n = 31; > 20 yrs : n = 38) and no known cardiovascular disease were compared with age- and sex-matched non-diabetic controls. Mean age of diabetic patients was respectively 29 ± 2 , 37 ± 2 and 43 ± 1 yrs. Arterial blood pressure was continuously measured with a Finapres^R device during 1 min standing and 1 min squatting.

Results : In the upright position, mean arterial blood pressure (78 ± 2 vs 77 ± 2 vs 83 ± 2 mm Hg, NS) and heart rate (91 ± 3 vs 88 ± 3 vs 92 ± 2 min⁻¹, NS) were similar in the three diabetic subgroups. In contrast, PP significantly increased with diabetes duration : 39 ± 2 vs 45 ± 2 vs 54 ± 2 mm Hg, respectively, $p < 0.001$. Such a progressive PP increase was not observed in the non-diabetic population within the same age interval. In the squatting position, PP further increased in all subgroups but the rise was almost double in diabetic patients of group 3 ($+ 10 \pm 1$ mm Hg, $p < 0.01$) and of group 2 ($+ 9 \pm 1$ mm Hg, $p < 0.05$) than in those of group 1 ($+ 5 \pm 1$ mm Hg). This higher PP increase during squatting was associated with a greater rise in mean blood pressure ($p < 0.01$) and a smaller reduction in heart rate ($p < 0.05$) in diabetic patients of group 3 than in those of group 1.

Conclusions : Pulse pressure, an index of arterial stiffening and a marker of vascular risk, increases with the duration of type 1 diabetes, within a range of age where such a rise is not observed in a non-diabetic control population.

