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 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 ± 1 mm Hg, p<0.01) and of group 2 (+9 ± 1 mm Hg, p<0.05) than in those of group 1 (+5 ± 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.