Increased arterial stiffness and depressed systolic myocardial longitudinal velocities - which comes first in type 2 diabetic patients?

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AIM: Type 2 Diabetes Mellitus (DM) implies cardiovascular dysfunction beyond glycemic control. We studied independent predictors for vascular alterations and their comparative rhythm in arteries and heart.

METHODS: We studied for 5 years 27 type 2 DM patients without initial cardiac disease. We performed vascular and cardiac scans.

RESULTS: DM control improved not reaching guidelines’ target. HbA1c dropped from 9.2 to 8% (-13%). Despite improvement, complications’ number increased. We measured beta index and epsilon modulus for vascular stiffness. Both increased from 9 to 13 (+49%) and 132 to 195 kPa (+47%). Renal dysfunction was noted, serum creatinine increased to 119±110 mmol/l. Vascular stiffness correlated with renal dysfunction (r=0.52). It is also cardiac dysfunction in diabetes, myocardial systolic velocities diminishing over time (-13%) while compensating with radial systolic velocities (+13%). Vascular stiffness correlated with left ventricle (LV) high filling pressures (E/Vp) (r=0.47). Using stepwise regression analysis, we established an independent predictive model for stiffness progression. It consists in renal function and LV diastolic function. No velocities were retained in the predictive model. All p were significant.

CONCLUSIONS: Evolution after 5 years of the DM patients under suboptimal treatment was unsatisfactory. Vascular stiffness was higher, though not appearing sooner. The predictive model for vascular dysfunction included only diastolic cardiac function.