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RELATIONSHIP BETWEEN BLADDER, PERIARTERIAL AND SOMATIC NEUROPATHY IN DIABETES

Hypothesis / aims of study

Diabetes commonly affects bladder nerves. However, relation between bladder, periarterial and somatic neuropathy in diabetes is not well known. Here we studied such relations.

Study design, materials and methods

Total 110 diabetic subjects were enrolled in the study. All were referred patients in order to screen diabetic neuropathy irrespective of symptoms. They were 61 men, 49 women; mean age 59.3 years (31-85 years); mean disease duration 14.0 years (5-30 years); mean HbA1C 10.1% (5.1-16.3%). We performed nerve conduction study (NCS, A-alpha/beta and B fiber), ultrasound post-void residual measurement (PVR, abnormal>50 ml, mainly Adelta/C fiber) and postural blood pressure measurement (abnormal>-20 mmHg, Adelta/C fiber). Statistics was performed using Fisher's exact probability test and Student's *t*-test.

Results

NCS abnormality, PVR and postural hypotension were noted in 74, 19 and 36 of the subjects, respectively. There were clear relationship between NCS and PVR ($p<0.05$), postural hypotension and PVR ($p<0.05$) and NCS and postural hypotension ($p<0.01$), respectively. There were also subjects who had NCS abnormality alone, PVR alone and postural hypotension alone. PVR did not relate with HbA1C value, while it clearly related with duration of diabetes ($P<0.05$).

Interpretation of results

(Common pathophysiology) These findings indicate that bladder, somatic and peri-arterial neuropathies might share the same pathological process, e.g., hyperglycemia-induced molecular changes (intra-neuronal polyol cascade etc.) and ischemia of vasa nervosum. (Bladder-specific pathophysiology) over-distension injury (due to polyuria), changes in the urothelium, different nerve receptors, e.g., muscarinic M3 receptors and alpha 1A/D receptors in the lower urinary tract, while alpha 1B receptors in the arterial wall.

Concluding message

Bladder dysfunction correlates with somatic and periarterial neuropathy. On the other hand, 16% of bladder dysfunction occurs without somatic and periarterial neuropathy, therefore regular PVR measurement seems necessary.

Disclosures

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