

EFFECTS OF SHORT-TERM SEVERE AND LONG-TERM MILD STZ-INDUCED DIABETES IN URETHRAL TISSUE OF FEMALE RATS

Hypothesis / aims of study

Diabetes mellitus affects multiple organs including urinary system either in diabetic or in prediabetic stages. Recent evidence strongly suggests that urinary incontinence is a common complication among women with diabetes. In addition to these studies, we and other investigators showed that diabetes induced alterations of urethral tissue in rats. Our hypothesis was that the intensity and number of alterations on urethral striated muscle and extracellular matrix of short-term severe diabetes were higher compared to long-term mild diabetes in rats.

Study design, materials and methods

For the induction of mild diabetes (blood glucose between 120-300 mg/dL), female newborns received *streptozotocin* (100 mg/kg body weight, sc route) and to induction of short-term severe diabetes (blood glucose level >300 mg/d) adult animals received *streptozotocin* at 40 mg/kg, iv route. The rats were killed on day 133 of the experimental by i.p. Thiopentax[®] injection at 80 mg/kg and the urethrovaginal tissues were harvested. Morphometric, pathological, immunohistochemical to fast and slow fibers, and ultrastructural analysis were conducted

Results

In long-term mild diabetes were found collagen deposition, severe fibrosis, lipid droplets and numerous subsarcolemmal and intermyofibrillar mitochondria. The effect of STZ-induced short-term severe diabetes and long-term mild diabetes on urethral striated muscle and ECM of female rats resulted in diabetic myopathy in both models which included decrease number of fast fibers and loss of specific localization of fibers type I and type II.

Interpretation of results

The low intense changes in short-term severe diabetes showed that poor glycemic control is less aggressive for urethral tissue in rats than glucose tolerance deviated slightly from the normal during a long period of time. These findings may motivate the need to identify mild hyperglycemia as a risk factor that contributes to the development of UI

Concluding message

Long-term mild diabetes amplifies the alterations found in urethral tissue with severe fibrosis and has important implications for the monitoring and treatment strategies implemented in patient with *diabetes mellitus*.

Disclosures

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