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INFLUENCE OF DIABETES AND PREGNANCY IN ULTRASTRUCTURAL ANALYSIS OF THE RECTUS ABDOMINIS MUSCLE AND EXTRACELLULAR MATRIX IN RATS

Hypothesis / aims of study

The abdominal muscle, especially, the rectus abdominis, take part on the Urinary Continence mechanisms. It is well know that urinary incontinence is a common symptom during pregnancy, because influences urinary tract function and, *Diabetes mellitus* during pregnancy is associated with higher level of urinary incontinence (1). Studies demonstrate that diabetes induced alterations of urethral tissue in rats (2,3). Our hypothesis was that the diabetes associated with pregnancy leads to changes on the rectus abdominis muscle and extracellular matrix. The aim of this study is to investigate the effects of pregnancy and diabetes on the extracellular matrix and skeletal striated muscle in rats.

Study design, materials and methods

Female Wistar rats were maintained under controlled conditions and divided into six experimental groups (n=3 rats/group): Control, Pregnant, Mild Diabetic, Severe Diabetic, Mild Diabetic Pregnant and Severe Diabetic Pregnant. For the Sereve Diabetic groups the diabetes was induced by streptozotocin (40mg/Kg body weight, ip route) to produce a severe hyperglycemic state (more than 300 mg/dL) in adulthood, and the Mild Diabetics groups the diabetes was induced by streptozotocin (100mg/Kg body weight, sc route) on the firt day of life, to produce a hyperglycemic state between 120-300 mg/dL. For the Pregnant goups the female rats were mated with male rats overnight. At term pregnancy (21th day), the rats were anesthetized with Thiopentax® ip, and killed for the harvesting of maternal rectus abdominis tissues. The rectus abdominis sections were cut and analyzed by transmission electron microscopy for ultrastructural analysis of the extracellular matrix and skeletal striated muscle.

Results

In the control and pregnant groups was found well- organized myofibrils forming intact sarcomere, abundant intermyofibrillar mitochondria and with normal collagen distribution. The mild diabetic groups caused an increased interstitial collagen, lipid droplets, numerous subsarcolemmal and intermyofibrillar mitochondria and the glycogen granules were dispersed in larger quantities in the striated muscle fyber. In the severe diabetes groups centrally located myonuclei presence and sarcoplasmic reticulum sparse T tubes was noted.

Interpretation of results

The Diabetic (Severe and Mild) groups showed that hyperglycemia in different levels is aggressive for striated skeletal muscle, especially the rectus abdominis. These findings may motivate the need know if these alterations is as a risk factor that contributes to the development of UI in women.

Concluding message

The *Diabetes mellitus* leds to ultrastruture changes in skeletal striated muscle, demonstrating that the rectus abdominis muscle and extracellular matrix present fundamental function.

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Disclosures

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