MORPHOLOGICAL ANALYSIS OF THE RECTUS ABDOMINIS MUSCLE IN PREGNANT WOMEN WITH HYPERGLYCEMIA AND URINARY INCONTINENCE

Marilza Vieira Cunha Rudge¹, Giovana Vesentini¹, Fernanda Piculo¹,², Beatriz Souza Harada², Ana Paula Silveira Leite², Carina Guidi Pinto², Debora Cristina Danasceno¹, Silma Maria Michelin Matheus³, Sarah Maria Barneze Costa¹, Angelica Mercia Pascon Barbosa¹,², Gabriela Marini¹,²,³
¹ São Paulo State University (Unesp), Medical School, Botucatu, Brazil
² São Paulo State University (Unesp), School of Philosophy and Sciences, Marilia Brazil

HYPOTHESIS / AIMS OF STUDY

The American Diabetes Society estimates that 1 in 5 pregnant women (18%) are at risk of having gestational diabetes mellitus [1] and the prevalence of urinary incontinence (UI) during pregnancy may reach 75%.

Skeletal striated muscle is the main organ of glucose metabolism, so it is of great importance to study the muscular changes due to gestational hyperglycemia. The aim of this study was to analyze the morphology of fiber types and extracellular matrix in the rectus abdominis muscle of pregnant women with hyperglycemia and urinary incontinence.

METHODS

We included pregnant women who underwent prenatal care and underwent cesarean delivery in the aforementioned Department, without previous diagnosis of diabetes and hyperglycemia. Without previous UI, with current gestational UI and agreed to sign the informed consent form. The incontinent women were divided into two groups: hyperglycemic pregnant women and normoglycemic pregnant women. During the surgical procedure of the cesarean section, a sample of the rectus abdominis muscle was removed with 1 cm in diameter and the tissues were intended histological analysis with hematoxylin-eosin and picrosiris red and immunohistochemistry for fast and slow fibers.

RESULTS

Of the 324 women who accepted to participate in the study, 250 or evolved to normal deliveries or out-of-service deliveries, 74 biopsies were performed but after 37 losses in the processing of the material, the final analysis of the rectus abdominis muscle was performed in 21 women in the hyperglycemic group and 16 in the normoglycemic group.

The groups were homogeneous in all sociodemographic and clinical variables, except for the glycemic average and values of the oral glucose tolerance test.

In the morphometric variables, the hyperglycemic group had a smaller area and diameter of the slow fibers when compared to the normoglycemic group (p = 0.0241 and p = 0.0019 respectively), besides the loss of predominance of fast fibers.

There was no difference in relation to the area, diameter and number of fast fibers, number of slow fibers and amount of collagen. (Table 1)

INTERPRETATION OF RESULTS

It is known that diabetes induces functional, metabolic and structural changes in skeletal muscle and the morphological changes found in this work are in agreement with the results found in animal models in the urethral and rectus abdominis muscle of diabetic pregnant rats, which demonstrate the loss of predominantly fast fiber [2,3]

CONCLUDING MESSAGE

Hyperglycemia leads to changes in the fibers of the rectus abdominis muscle in pregnant women with urinary incontinence. This study is the beginning of a line research that confirms in humans the same alterations found in animal models and requires future investigations.

REFERENCES


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