

ОНТОГЕНЕТИЧЕСКИЕ ОСОБЕННОСТИ ФОРМИРОВАНИЯ РЕБЕРНО-ГРУДИННОГО КОМПЛЕКСА ПРИ АЛЛОКСАНОВОМ САХАРНОМ ДИАБЕТЕ

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Актуальность. Сахарный диабет относят к числу социальных проблем, сопровождающихся глубокими изменениями в организме человека. Изменения формы и функционального строения грудной клетки увеличение размеров органов в грудной полости влияет на функциональное состояние. Отсутствие данных о морфофункциональных особенностях грудино-реберного комплекса приводит к серьезным дефектам и ошибкам в профилактике и лечении травм и деформаций в определенных областях.

Цель работы. Исследование динамики морфологических изменений грудино-реберного комплекса потомков крыс с аллоксановым сахарным диабетом.

Материалы и методы исследования.

Исследование проводилось на 42 белых лабораторных крысах весом 150-200 г. На пятый день беременности у крыс был вызван экспериментальный сахарный диабет по модели аллоксана.

Материалом исследования послужили компоненты грудного комплекса 7-14-21-30-45-дневного возраста молодых крыс, рожденных от матерей экспериментального диабета. Для гистологического анализа в исследовании необходимо было взять комбинацию грудино-реберного комплекса крыс из экспериментальной группы.

Срезы окрашивали методом Ван-Гизона, гематоксилин-эозина, а также методом Массона для изучения соединительной ткани, клетки и ее промежуточных элементов, проводили гистохимические реакции методами ШИК

Ключевые слова: Экспериментальный сахарный диабет, аллоксан, крысы, хондроцит, грудино-реберный комплекс

ABSTRACT

Diabetes mellitus, commonly known as diabetes, is a metabolic disease that causes high blood sugar. The morphofunctional active point in the formation of the chest is the sternocostal complex. Changes in the shape and functional structure of the chest affect the functional state of the chest cavity organs. The lack of data on the morphofunctional properties of the sternocostal complex leads to serious shortcomings and errors in the prevention and treatment of injuries and deformities in certain areas.

The study was carried out on 42 white laboratory rats weighing 150-200 g. The animals were kept in living conditions according to a standard diet (with food and water). For the study, the animals were divided into 2 groups.

The material for the study was the breast components of 7–14–21–30–45 days of age in young rats born to mothers with experimental diabetes. For histological analysis in the study, it was necessary to obtain a sternocostal combination of rats of the experimental group. The results of control and morphological studies of the sternocostal complexes in the offspring of experimental rats in the dynamics of growth of early postnatal ontogenesis showed that maternal alloxan diabetes leads to a change in the mechanism of development of the sternum during pregnancy and lactation of a mother with diabetes.

KEY WORDS: Chondrocyte, Sternocostal complex, experimental diabetes, rats.

INTRODUCTION

The morphofunctional active point in the formation of the chest is the sternocostal complex. Changes in the shape and functional structure of the chest affect the functional state of the chest cavity organs. The lack of data on the morphofunctional properties of the sternocostal complex leads to serious shortcomings and errors in the prevention and treatment of injuries and deformities in certain areas.

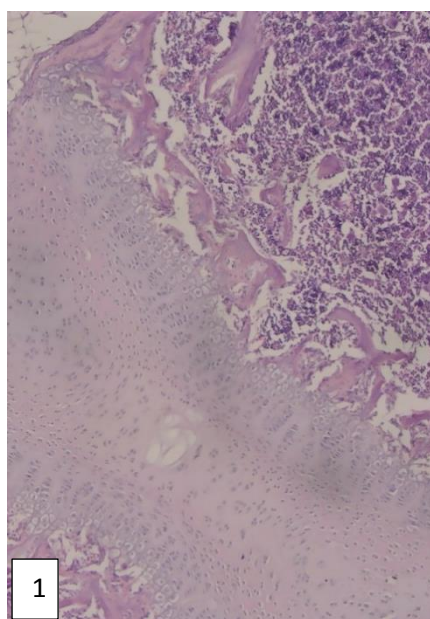
MATERIALS AND METHODS

The study was carried out on 42 white laboratory rats weighing 150-200 g. For the study, the animals were divided into 2 groups. On the fifth day of gestation, the rats were induced experimental diabetes mellitus using the alloxan model. In the experimental group, a mixture of alloxan 150 mg / kg was injected intraperitoneally by a single intraperitoneal injection.

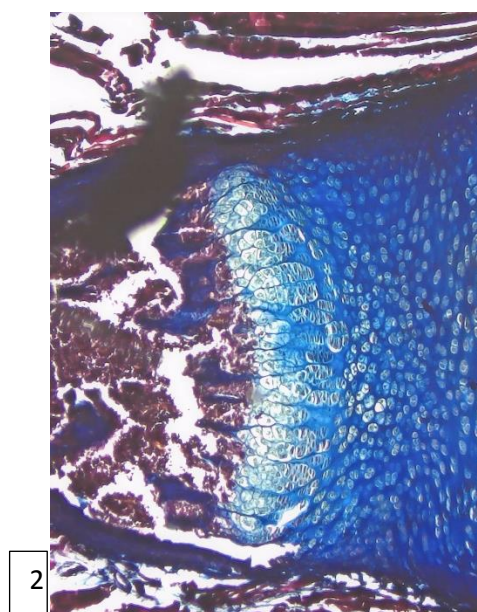
The material for the study was the breast components of 7–14–21–30–45 days of age in young rats born to mothers with experimental diabetes.

RESULTS AND DISCUSSION

In fact, the growth zone in all bones plays an important role in the formation and growth of bones, so the state of the structures of the sternocleidomastoid ridge has been studied. In morphological examination for histological examination of the thorax regions of the sternum complex of rats in the initial period of observation, the normative formation of ribs in the control animal during this period corresponds to the observation period (Fig. 1).



Control. 45th day of observation.
Staining method-hematoxylin-eosin.
Magnification 200 times.



Experiment. 45 days of observation. Masson's
staining by the PIC method. Increased 200 times.

At a later date (45 days), chondrocytes have a spherical or round nucleus surrounded by cytoplasm. The growth zone is represented by proliferative cells,

which are columnar and consist of 10-12 cells in each column. These chondrocytes differ from the adjacent columns by a clear set of fibrils oriented longitudinally along the layers of the main matrix material. In some chondrocytes of this zone, mitotic patterns were revealed. Specific cases of mitosis were revealed in rats of the main group [6]. Cartilage cracks are found between the columns of chondrocytes. In places, local dystrophic changes in chondrocytes are detected, the vascular wall thickens, fibrous structures decrease, and plasmorrhagic foci appear around the vessels (Fig. 2).

CONCLUSIONS

During the observation periods, the process of differentiation in the bone trabeculae slows down sharply, and therefore the range of the growth zone of the sternum expands in the distal and proximal directions. The data obtained indicate that during pregnancy in rats with maternal alloxan diabetes, the development of all structural structures of the growth zones of the sternocostal complex is delayed.

REFERENCES

1. Ibrokhimova L.I., Rasulov Kh.A. Influence of alloxan diabetes during pregnancy on the morphological formation of the sterno-costal complex. American Journal of Medicine and Medical Sciences DOI:10.5923/j.ajmms.2021; 11(12): 847-850
2. Hough F.S. et al. Mechanisms in endocrinology: mechanisms and evaluation of bone fragility in type 1 diabetes mellitus. Eur. J. Endocrinol. 2016; 174: R127–138. DOI: 10.1530/EJE-15-0820.
3. Liao C.C., Lin C.S., Shih C.C., Yeh C.C., Chang Y.C., Lee Y.W. et al. Increased risk of fracture and postfracture adverse events in patients with diabetes: two nationwide population-based retrospective cohort studies. Diabetes Care. 2014; 37: 2246–2252.
4. Jackuliak P., Payer J. Osteoporosis, fractures, and diabetes. Int. J. Endocrinol. 2014; 2014: 820615. DOI: 10.1155/2014/820615.

5. Ibrokhimova LI, Rasulov Kh.A., Structural features of the sternocostal complex of rats in the stages of early postnatal ontogenesis in alloxan diabetes mellitus. -118 p