

HEPATIC CHANGES IN 3- AND 14-DAY-OLD ALBINO LABORATORY RATS: A HISTOMORPHOMETRIC STUDY

Nortaeva N.A., Sobirova G.Z.

Tashkent State Medical University

Tashkent, Uzbekistan

Annotation: This study investigates the structural and histomorphometric changes in the liver of albino laboratory rats aged 3 and 14 days. The aim was to evaluate postnatal hepatic development through microscopic and morphometric parameters.

Materials and Methods

The study was conducted on 3- and 14-day-old albino rats (*Rattus norvegicus*). Liver samples were fixed in 10% neutral formalin, embedded in paraffin, sectioned at 5 µm, and stained with hematoxylin and eosin (H&E). Microscopic examination was performed under a light microscope, and morphometric measurements were carried out using an ocular micrometer. Parameters such as hepatocyte diameter, sinusoidal width, and central vein diameter were measured.

Results

In 3-day-old rats, hepatocytes were small, polygonal, with centrally located nuclei and prominent nucleoli. Sinusoids were narrow and irregularly arranged. In 14-day-old rats, hepatocytes appeared larger, more polygonal, and better organized in hepatic cords. The sinusoidal spaces were wider, and the central veins were more clearly defined. Quantitative morphometry showed a significant increase in hepatocyte and central vein diameters, indicating active postnatal liver growth and maturation.

Conclusion

The histomorphometric data confirm that significant hepatic development occurs between the 3rd and 14th postnatal days. These changes reflect the functional maturation of the liver during early postnatal life, associated with metabolic adaptation after birth.

Keywords: Liver, albino rat, histology, morphometry, postnatal development, hepatocyte.

References

1. Akhmedova S.M., Nortaeva N.A., Nortaev A.B. Morphological changes in the teeth of adolescent children with hypotireosis // Collection of materials of the scientific and practical conference with international participation, dedicated to the 100th anniversary of the Tashkent Medical Academy, "100 years of the

- Tashkent Medical Academy – the era of great achievements and discoveries". Tashkent, 2022 -P. 199-200
2. Nortaeva N.A., Akhmedova S.M., Nortaev A.B. Morphological changes in the teeth adolescent children with hypotireosis // Problems of biology and medicine. - Samarkhand, 2022. - P 270. ISSN 2182-5674, <https://doi.org/10.38096/2181-5674.2022>
 3. Nortaeva N.A., Nortaev A.B. Morphological changes in teeth against the background of experimental hypothyroidism // Topical issues of modern scientific research.-Dushanbe 2022.-P 168.
 4. Nortaeva N.A., Nortaev A.B. Morphological changes in the tooth in experimental hypothyroidism // Issues of innovative development of science, education and technology. - Andijan, 2022.-P 273-275
 5. Nortaeva N.A., Nortaev A.B., Akhmedova S.M. To study the morphological changes in the tooth against the background of experimental hypothyroidism // Current problems of microbiology. - Tashkent, 2022 -P. 148-152
 6. Nortaeva N.A. Morphological changes in teeth as a result of malnutrition in preschool children // Proceedings of the conference dedicated to the 95th anniversary of academician, morphologist, scientist Komiljon Zufarov. - Tashkent, 2021 -P. 34-36
 7. Nortaeva N.A., Akhmedova S.M. Morphological changes in the dental in experimental hypotireosis // Collection of materials of the scientific and practical conference of young scientists with international participation, dedicated to the 100 th anniversary of the Tashkent Medical Academy, «innovative approaches in medicine». Tashkent, 2022 -P. 51
 8. Nortaeva N.A., Akhmedova S.M., Nortaev A.B. Anthropometric indicators of the maxillofacial system in school-aged children with hypothyroidism // Modern scientific research topical issues, achievements and innovations. Current scientific issues, current affairs, achievements and innovations. Penza, 2023 –P. 153. ISBN 978-5-00173-707-0
 9. Nortaeva N.A., Akhmedova S. M., Nortaev A.B., Rajabov B.M. Changes in the face-jaw system of experimental hypothyroidism // Texas Journal of Medical Science <https://zienjournals.com> 2023 –P. 61-64 ISSN NO: 2770-2936
 10. Nortaeva N., Akhmedova S., Berdiev O., Anthropometric dimensions of the maxillofacial system in children with hypothyroidism aged 8-16 year // Journal of Medicine and Innovations www.tsdi.uz 2023 –P. 230-235 ISSN 2181-1873
 11. Nortaeva N.A., Akhmedova S.M., Nortaev A.B, Effects of hypothyroidism on the maxillofacial system // Uzbek journal of case reports 2023 –P.126, Tom 3. <https://doi.org/10.55620/ujcr.3.sp.2023>

12. 1. Usmanov R.Dj., Gulmanov I.D., Nortaev A.B. Development and prevalence of periodontal diseases in workers working with chemical paints // 100 years of the Tashkent Medical Academy – the era of great achievements and discoveries – 2022. P-244.
13. 2. Saidov A.A. Periodontal disease and its prevention in workers of the textile industry // Monograph-2020. 134 p.
14. 3. Volozhin A.I., Filatova E.S., Petrovich Y.A. and others. Evaluation of the state of the periodontal by the chemical composition of the environment of the oral cavity // Dentistry. -2000. №1- P. 13-16.
15. 4. Nortaev A.B., Rajabov B.M., Berdiev O.V. Oral inflammation in light industry workers // Texas Journal of Medical Science ISSN NO: 2770-2936. - 2023. P-84-86. <https://zienjournals.com>
16. 5. Nortaev A.B., Usmanov R.Dj., Nortaeva N.A. Periodontal disease and its complications in 21-30-year-old chemical paint workers // Journal of medicine and innovations ISSN 2181-1873 2023.P-215-220 www.tsdi.uz
17. Nortaev A.B., Usmanov R.Dj., Berdiev O.V. Use of cefixime in the treatment of periodontal disease in industrial employees // Farmaecutit journal №3, 2023 P. 77-80 UDK: 616.314.18-002.4-885:615.331:323.329
18. Nortaev A.B., Usmanov R.Dj., Ibragimova Sh.A. Severe Consequences of the Development of Periodontal Disease in the Example of Employees Working in Light Industrial Plants // Texas Journal of Medical Science ISSN NO: 2770-2936 <https://zienjournals.com> Date of Publication:06-05-2023 P- 110-113
19. Nortaev A.B., Usmanov R.Dj., Berdiev O.V. Periodontal disease and its complications in 21-30-year-old chemical paint workers // Journal of oral medicine and craniofacial research Samarkhand - 2023. P.-21
20. Nortaev A.B., Akhmedova S.M., Usmonov R.Dj. Periodontal disease and its development in the case of employees of chemical shops // Uzbek journal of case reports Part 3. Samarkhand - 2023. P.-130
21. Nortaev A.B., Usmanov R.Dj., Rajabov B.M. The level of periodontal disease in 20-28-year-old textile industry workers // 77th International Scientific and Practical Conference "Achievements of Fundamental, Applied Medicine and Pharmacy". Samarkhand - 2023. P.-525
22. Nortaev A.B., Usmanov R.Dj., Gulmanov I.Dj. Etiology of the development of periodontal disease in workers of the manufacturing industry // "Current aspects of the pathogenesis of diseases caused by environmental factors" Materials of international scientific and practical conference Tashkent – 2023. P-11-12