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COMPARATIVE ANALYSIS OF MORPHOLOGICAL FEATURES OF THE SPLEEN IN LATE POSTNATAL ONTOGENESIS UNDER NICOTINE-ALCOHOL INTOXICATION AND AFTER THERAPEUTIC CORRECTION

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Abstract:
This study presents the results of a comparative morphological evaluation of the spleen during late postnatal ontogenesis under the influence of chronic nicotine-alcohol intoxication and subsequent therapeutic intervention. Structural alterations in the parenchyma and stroma of the spleen were identified under toxic stress, as well as the efficacy of corrective treatment based on hepatoprotective and antioxidant agents. Histological and morphometric techniques were used to objectively assess the severity of pathological changes and the extent of tissue regeneration.

Keywords: spleen, postnatal ontogenesis, nicotine, alcohol, intoxication, morphology, correction, histology

Introduction:

The spleen plays a critical role in the immune and hematopoietic systems and is highly sensitive to toxic agents. Nicotine and ethanol, both common toxins, have well-documented negative effects on immune organs, including the spleen. Chronic combined exposure to these substances can provoke dystrophic and degenerative changes. However, morphological responses of the spleen in late postnatal ontogenesis and the potential reversibility of these alterations following therapeutic correction remain insufficiently explored.

Aim of the Study:

To conduct a comparative morphological analysis of the spleen in animals during late postnatal ontogenesis under chronic nicotine-alcohol intoxication and after therapeutic correction.

Materials and Methods:

The experiment was conducted on 6-month-old outbred white rats divided into three groups:

1. Control group (healthy animals);
2. Intoxication group (received daily administration of nicotine and ethanol for 30 days);
3. Correction group (after intoxication, received a 14-day course of essential phospholipids and vitamin E).

Tissues were fixed in 10% formalin, followed by standard histological processing. Hematoxylin-eosin and Van Gieson staining methods were employed. Morphometric analysis included measurements of capsule thickness, lymphoid follicle area, and red-to-white pulp ratio.

Results:

In the intoxication group, the following morphological changes were observed:

- Thickening of the capsule and trabeculae;
- Decreased number of lymphoid follicles;
- Disruption of white pulp architecture;
- Signs of lymphoid depletion and venous congestion in the red pulp.

After therapeutic correction, the following improvements were noted:

- Partial restoration of white pulp structure;
- Increased number of follicles;
- Reduced edema and venous hyperemia.

However, complete tissue recovery was not achieved, indicating the need for prolonged or more comprehensive correction strategies.

Conclusion:

Chronic nicotine-alcohol intoxication has a pronounced destructive impact on the morphological structure of the spleen during late postnatal ontogenesis. Therapeutic application of hepatoprotective and antioxidant agents facilitates partial restoration of the organ's morphofunctional integrity, highlighting their relevance in the complex treatment of intoxication consequences.

References:

1. Baranskaya A.V., Gudim A.F. Morphology of the immune system under toxic influences. Minsk: BelMedPress, 2018.
2. Burkov S.V. et al. Histological Techniques. Moscow: Medicina, 2017.
3. Maltsev A.V., Novikova I.Yu. Alcohol effects on immune organs. // Morphology Bulletin. – 2020. – Vol. 26. – No. 3. – Pp. 45–50.
4. Szabo G., Saha B. Alcohol's effect on host defense. Alcohol Res. 2015;37(2):159–170.
5. Li Y. et al. Protective effects of vitamin E against nicotine-induced oxidative stress. J Toxicol Sci. 2016;41(2):213–220.