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Forensic Criteria for the Diagnosis of Morphofunctional Changes in the Spleen in Drug Poisoning

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ABSTRACT

Drug poisonings play a significant role in the structure of non-violent deaths and often present significant diagnostic challenges in forensic practice. In cases of polypharmacy, self-medication, and chronic drug use, morphological manifestations of intoxication can be nonspecific. The spleen, as an organ involved in immune, hematopoietic, and detoxification processes, reflects the body's systemic response to toxic exposure. Studying morphofunctional changes in the spleen in acute and chronic drug intoxications is of practical interest for improving the objectivity of forensic medical assessments of the cause of death.

KEYWORDS: poisoning, spleen, morphology, forensic histology.

Purpose of the study: The aim of this study was to investigate the morphofunctional changes in the spleen in acute and chronic drug poisoning and to assess their diagnostic significance.

Materials and methods. The study utilized forensic autopsy data from 18 individuals whose cause of death was determined to be acute and chronic drug poisoning. The study group included individuals of both sexes, aged 28 to 67 years. Macroscopic and histological examinations of the spleen were performed, with specimens stained with hematoxylin and eosin. The condition of the capsule, white and red pulp, vascular bed, the severity of cellular reactions, and signs of degenerative and circulatory disorders were assessed.

The results obtained and their discussion Macroscopically, in most cases, the spleen was enlarged, flaccid, and engorged, consistent with the signs of toxic and hypoxic effects described in the literature. Histologically, acute drug poisoning revealed marked circulatory disturbances in the red pulp, venous congestion, stromal edema, and focal hemorrhages, consistent with data from other authors. Chronic intoxications were characterized by predominantly white pulp atrophy, lymphoid follicle reduction, stromal sclerosis, and reticuloendothelial activation, reflecting prolonged toxic and immunosuppressive effects. Histological examination revealed differences in morphological changes depending on the nature of the intoxication. In acute drug poisoning, the following changes were predominant: severe engorgement of the red pulp vessels, venous congestion, stromal edema, focal hemorrhages, and a moderate decrease in lymphoid follicles. In chronic drug intoxications, the predominant changes were marked atrophy of the white pulp,

reduction of lymphoid follicles, depletion of the lymphocyte pool, stromal sclerosis, proliferation of reticuloendothelial cells, and signs of prolonged venous congestion.

CONCLUSION.

A study of 18 fatal cases revealed that the spleen undergoes characteristic morphofunctional changes in drug poisoning, reflecting both acute and chronic toxic effects. Taking into account the identified macro- and microscopic features allows for increased diagnostic value of spleen morphological examination in forensic practice and can be used to develop comprehensive criteria for determining the cause of death.

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