

MORPHOLOGICAL CHANGES IN THE THYROID GLAND UNDER POLYPHARMACY WITH ANTI-INFLAMMATORY DRUGS: A LITERATURE REVIEW

Yakhyoyev Fakhriddin Fazliddin ogli

Abu Ali ibn Sino Bukhara State Medical Institute, Uzbekistan, Bukhara

faxriddinmed@gmail.com, <https://orcid.org/0009-0007-3976-5157>

Abstract. This literature review analyzes possible morphological changes in the thyroid gland associated with the combined and prolonged use of anti-inflammatory drugs. Available evidence indicates that certain nonsteroidal anti-inflammatory drugs may affect thyroid hormone metabolism. Experimental studies have reported changes in thyroid follicular diameter, follicular epithelial height, and colloid characteristics following exposure to certain drugs. However, it is important to distinguish functional alterations in thyroid hormone parameters from direct morphological injury to thyroid tissue. The combined effects of multiple anti-inflammatory drugs, particularly their morphological and morphometric consequences under polypharmacy conditions, remain insufficiently investigated. Therefore, comprehensive histological and morphometric assessment of thyroid tissue represents an important direction for further experimental research.

Keywords: thyroid gland, polypharmacy, anti-inflammatory drugs, morphology, morphometry, thyroid follicle, colloid.

Introduction. The structural organization of the thyroid gland is closely associated with its functional activity. The diameter of thyroid follicles and the height of follicular epithelial cells are important morphological parameters reflecting the functional state of the gland [1,2].

Experimental studies have demonstrated that exposure to certain anti-inflammatory drugs may be accompanied by histopathological changes in the thyroid gland. In particular, celecoxib administration has been associated with

histopathological alterations in thyroid tissue, together with changes in endocrine parameters [1]. Experimental administration of diclofenac sodium has also been reported to cause follicular enlargement, flattening of follicular epithelial cells, and degenerative cellular changes. Morphometric analysis demonstrated an increase in mean follicular diameter and a decrease in mean epithelial height [2].

Drug-related effects on the thyroid gland are not necessarily limited to direct tissue injury. Some medications may influence thyroid hormone transport, metabolism, or the hypothalamic-pituitary-thyroid regulatory system [3]. Therefore, simultaneous assessment of morphological, morphometric, and biochemical parameters is appropriate when evaluating the thyroid effects of pharmacological agents.

Polypharmacy introduces an additional level of complexity because the combined administration of several drugs may produce effects that differ from those of individual agents. Available literature indicates that morphological and morphometric changes in the thyroid gland under polypharmacy with anti-inflammatory drugs remain insufficiently characterized [4]. In this context, quantitative assessment of follicular diameter, epithelial height, colloid volume, and stromal components may provide objective evidence of thyroid tissue responses to combined drug exposure [4,5].

Conclusion. The available literature indicates that anti-inflammatory drugs may affect not only thyroid functional parameters but also the morphological organization of thyroid tissue under certain experimental conditions. However, the morphological and morphometric consequences of polypharmacy with anti-inflammatory drugs remain insufficiently studied. Further experimental investigations using comprehensive histological and morphometric approaches are therefore warranted.

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