

Morphological Structure of the Gastric Mucosa in Polypragmasia with Anti-Inflammatory Drugs

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Relevance. *Nevertheless, the dynamics of structural changes in the gastric mucosa can be considered as a variant of a typical pathological process (chronic inflammation), acquiring a number of specific features due to a specific etiological factor [1.3.5].*

Keywords: *Drugs, Polypragmasia, pathological, structura.*

The pathogenesis of chronic gastritis of the disease has its own characteristics for different forms of gastritis [7.9.11]. It is generally recognized that *Helicobacter pylori* – associated gastritis is most common, however, the so-called NSAID–gastropathy (one of the varieties of chemical gastritis, type C) is no less relevant - damage to the gastric mucosa caused by taking nonsteroidal anti-inflammatory drugs (NSAIDs). Nonsteroidal anti-inflammatory drugs are among the most common medications often prescribed by doctors for the treatment of various diseases in patients of all age groups [2.4.6.8.10.12].

It is known that 300 million people worldwide use nonsteroidal anti-inflammatory drugs (NSAIDs) [13.14]. At the same time, NSAIDs are over-the-counter drugs, and patients often take them without prior consultation with a doctor. In the "protection" of the gastroduodenal mucosa, epithelial cell regeneration is the most important factor [15.16.17.18]. Proliferative activity of the epithelium is an important criterion for assessing the regenerative potential of the gastric mucosa and, accordingly, the consistency of its adaptive mechanisms [19.20.21].

Inflammatory and destructive lesions of the mucous membrane of the gastrointestinal tract that occur against the background of taking nonsteroidal anti-inflammatory drugs (NSAIDs) occupy one of the leading places in the doctor's practice. The problem of their treatment is essentially a typical example of the complexity of managing comorbid conditions. If we turn to the protocols and results of any randomized clinical trials, we will certainly notice that the presence of comorbidity is most often an exclusion criterion [22.23.24.26].

These cells are the first to appear in the area of damage to the tissues of the body. Neutrophils are capable of migration, carry out phagocytosis and secrete various lysosomal enzymes and mediators that increase vascular permeability, activate T-lymphocytes and macrophages. Extravascular migration and accumulation of neutrophilic leukocytes in the site of damage and penetration of antigens is one of the main manifestations of the cellular immunity reaction. Abundant infiltration of tissues by neutrophils in combination with microcirculation disorders causes a violation of tissue nutrition [25.27].

Chronic diseases of the digestive organs are one of the first places occupied by non-erosive and erosive-ulcerative lesions of the upper gastrointestinal tract [28], in connection with which in recent years new directions have been identified in the study of the histological structure of the gastric mucosa of humans and mammals, and in particular, white rats, since white rats are the main model for reproducing human pathology under experimental conditions and preclinical testing of new drugs.

The relevance of studying NSAID-gastropathy is explained by the fact that nonsteroidal anti-inflammatory drugs are among the most common medications often prescribed for the treatment of many inflammatory diseases in humans and animals [29].

Gastric ulcer disease requires knowledge of the specific mechanisms of its formation with an accurate idea of the structural and functional rearrangements of the gastric mucosa in general pathological terms. The state of gastric mucosal compartments in the dynamics of the ulcerative process has not been sufficiently studied. At the same time, an integral assessment of the changes occurring in the gastric mucosa is important, which is possible with the use of new methodological approaches [17.19].

Questions related to the peculiarities of changes in the proliferation of the epithelium of the gastric mucosa with prolonged use of NSAIDs remain poorly studied and debatable.

The desire to increase the effectiveness of treatment, to help the patient recover from all the diseases that have developed in him inevitably leads to polypragmasia, that is, the simultaneous unjustified appointment of a large number of medicines, since only a reasonable prescription of medicines can increase the effectiveness of treatment and reduce the frequency of undesirable side reactions [27.28.29].

Thus, the choice of the object of study is justified by the fact that the morphology of the gastric mucosa, despite quite extensive data in the literature, has not been sufficiently studied under conditions of polypragmasia with anti-inflammatory drugs. At the same time, these data will contribute to a significant expansion and deepening of the understanding of the mechanisms of adaptation of the body to a complex of extreme factors in inflammatory processes.

The use of drugs in combinations to prevent simultaneous unjustified prescribing of drugs at this time, the issue of obtaining morphometric changes in the state of the gastric mucosa in a state of polypragmasia for the rational use of drugs is being actualized.

The purpose of the study. Study of morphometric parameters of the gastric mucosa in polypragmasia with anti-inflammatory drugs.

Research objectives:

1. To study the morphometric parameters of the stomach of healthy white rats in postnatal ontogenesis from 3 months of age to 6 months of age.
2. To study the morphometric parameters of parts and layers of the stomach wall of white rats from 3 months to 6 months of age with simultaneous use of up to 5 anti-inflammatory drugs for 10 days..
3. To establish morphofunctional features of changes in the gastric mucosa from three to six-month-old white rats 1 month after 10 days of using different combinations of drugs.
4. To carry out in a comparative aspect morphometric parameters of the gastric mucosa of white rats from three to six months of age normally, after 10 days of using five types of medicines and after one month, respectively.

The object of the study. Studies will be conducted on 72 mongrel mature rats from 3 to 6 months of age. In accordance with the objectives of the study, all observed animals will be divided into 3 comparable groups.

Research methods.

- coloring of macro-preparations according to Helman (1926)
- staining of micro-preparations with hematoxylin-eosin

- coloring of micro-preparations according to Van Gieson and Weigert
- immunofluorescence method
- the method of variational statistics using Strelkov tables and the definition of the Student's t-test

For the first time, a step-by-step change in the structure of morphometric parameters of parts and layers of the stomach wall of white rats from 3 months to 6 months of age with the simultaneous use of up to 5 different types of anti-inflammatory drugs will be studied.

For the first time, a standard dosage for the use of polypragmasia in rats will be selected. For the first time, the peculiarities of changes in the gastric mucosa in the state of polypragmasia at different times will be studied.

Laboratory animals that received a biostimulator in parallel with irradiation, a comparison of weight indicators with those of a group of rats that received only irradiation showed the highest body weight gain at the age of 3 months - by 1.04 times, the lowest in 12-month-old animals - by 1.01 times. The body weight of laboratory rats treated after irradiation, compared with animals exposed to chronic radiation sickness, did not change.

When comparing the parameters of the total thickness of the stomach wall of laboratory animals of the control groups and those exposed to chronic radiation sickness, its greatest increase in the cardiac department was noted at the age of 6 months and is 52.7%; in the pyloric department, the greatest increase in this indicator is also observed in 6-month-old animals and is 32.9%. The smallest increase in this indicator in both parts of the stomach occurs in animals at 12 months of age, amounting to 16.1% and 14.5%, respectively (Fig. 1).

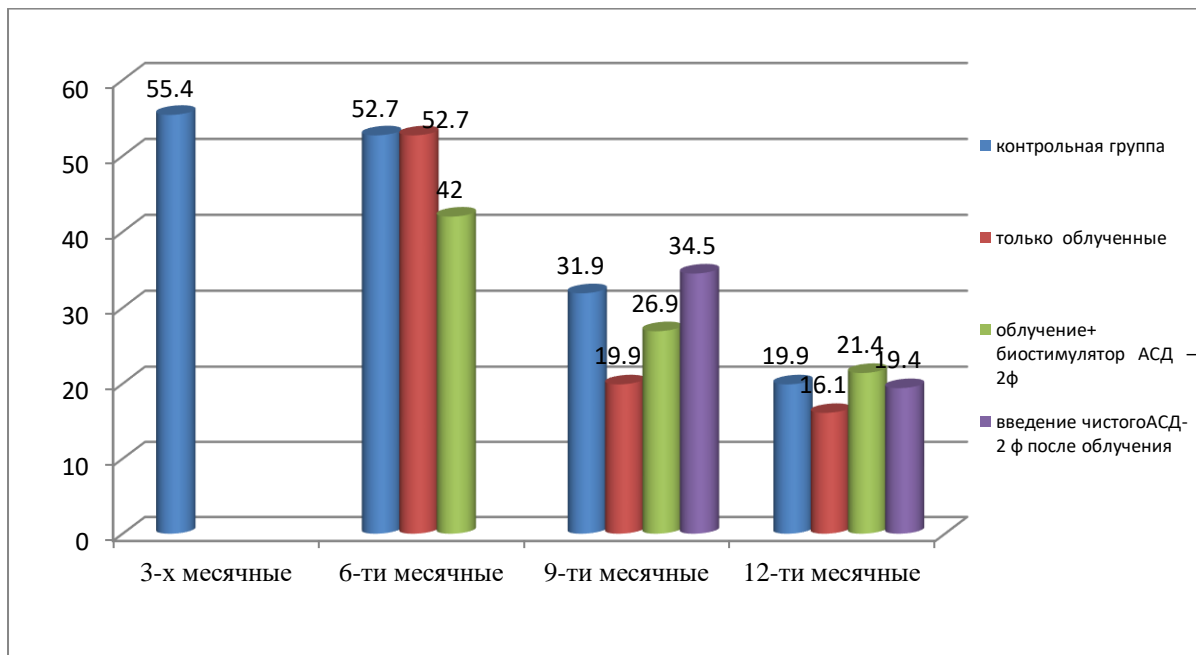


Fig. No. 1. Comparative characteristics of the rate of increase in the thickness of the wall of the cardiac stomach in normal, with chronic radiation sickness and with various correction with drugs (%).

The maximum rate of increase in the thickness of the gastric wall in both the cardiac and pyloric sections in the group of rats receiving radiation was observed at the age of 6 months and amounted to 42.0% and 44.8%, respectively. The lowest growth rate of this morphometric parameter in both parts of the stomach compared to the control group is observed in 12-month-old rats and, respectively.

According to the study, the highest rate of increase in the thickness of the mucous membrane in the cardiac organ of rats of the intact group at 3 months of age is 57.3%; in the pyloric department, this indicator is highest in 6-month-old animals and is 43.4%. The lowest rate of increase in the thickness of the mucous membrane in the cardiac and pyloric sections at the age of 12 months is 20.5% and 19.7%, respectively.

The epithelium is represented by three rows of cells. At the same time, the cells of the basal row are characterized by a small size, rounded and oval shape, with a tight fit to each other and a central location of the nuclei. The cellular composition of the middle and upper rows is represented by oval-shaped cells of a larger size, with an eccentric localization of nuclei that are located closer to the periphery of the cells. In the apical part of the cells, the presence of secretory granules is detected. The cells of the proximal row of the epithelium of the cardiac part of the stomach are covered with a cuticle.

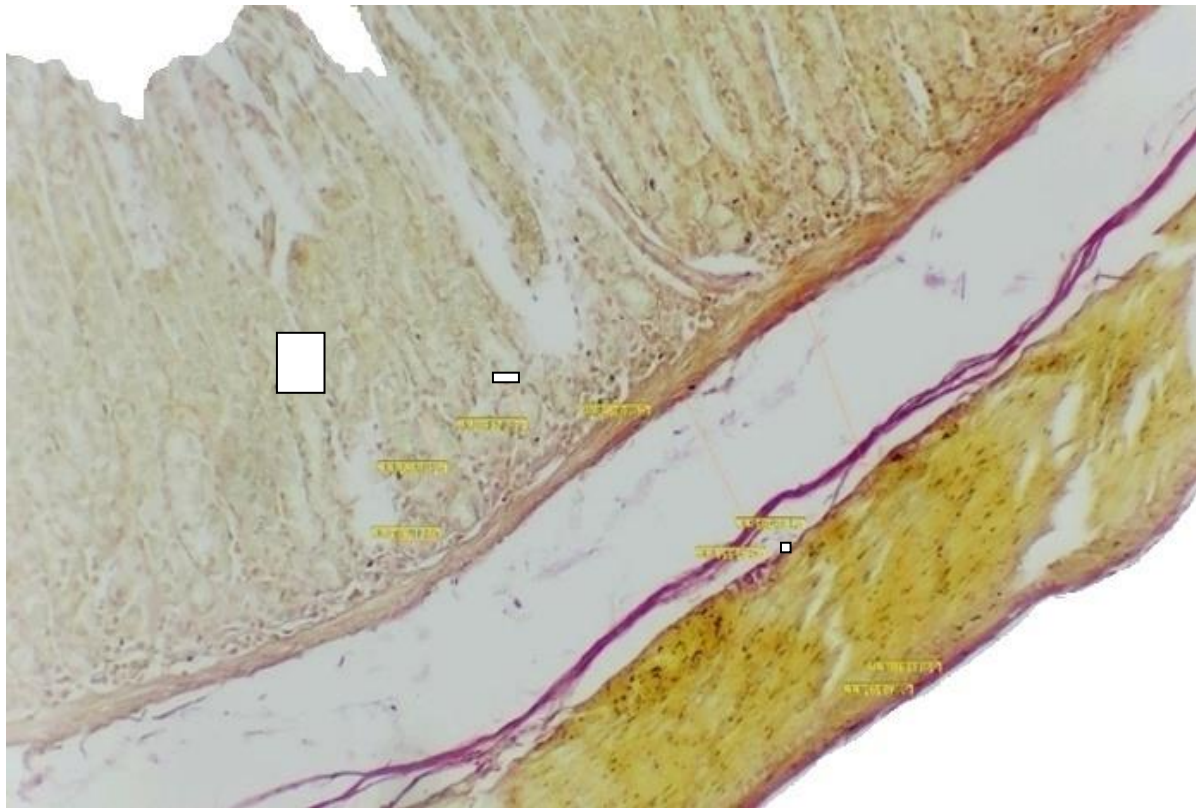


Fig. 2. The structure of the pyloric stomach of 6-month-old white rats with chronic radiation sickness. (1- mucous membrane, 2 - submucosal base, 3 - muscle layer. Staining with hematoxylin-eosin. Ok.10xob.40).

The epithelial cover of the mucous membrane of the organ wall of white rats exposed to chronic irradiation undergoes significant quantitative and qualitative changes. The epithelium consists of two rows of irregularly shaped cells, while secretory granules are not detected in the cells of the proximal row of the cardiac part of the stomach. This circumstance is due to the fact that in the epithelial cells of the stomach, with various types of pathology, the decay of nuclei is observed and vacuoles are found in them. A comparative analysis of the thickness of the epithelial lining of the control and irradiated groups showed that in rats that received radiation, there was a decrease in these data in the cardiac department - by 1.7 times, in the pyloric by 2.2 times.

The positive effect of the biostimulator is manifested in the fact that secretory granules appear in the cells of the basal row of the epithelium. In addition, epithelial cells acquire the correct shape, size

and are characterized by a tight fit to each other. It is justified by the theoretical approach and methods used in the study, the methodological fidelity of the studies carried out, a sufficient number of experimental animals, modern complementary experimental, morphometric, laboratory and statistical research methods, comparison of the results of the assessment of morphofunctional features of the stomach wall in chronic radiation sickness and the influence of a biostimulator, local studies with international, confirmation of the results, conclusions by competent authorities.

The results of studying the macro- and microscopic structure of the gastric mucosa and its structural changes will help to reveal the complex mechanism of the potological processes that occur in the body in a state of polypragmasia. The practical significance of the research results is to identify the basic principles of morphometric changes in the stomach wall of irradiated animals, improve the quality of diagnosis of chronic radiation sickness, contribute to the development of scientifically sound effective treatment tactics and prognosis methods, in turn, an experimental model for the study of patients with diseases of the digestive system under the influence of chronic radiation in scientific laboratories, use in the educational process of medical universities during lectures and practical classes on the subjects of anatomy, histology, pathanatomy, radiology and radiobiology, by students as a new source of information for independent work. The study of structural changes in the gastric mucosa of rats in normal and in the state of polypragmasia will allow us to establish the most critical combinations of these drugs. The obtained data will make a certain contribution to the theoretical aspects of nephrology, the results of the research can be used in practical medicine, when lecturing on anatomy, histology, pathological anatomy and pharmacology.

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