Morphological Characteristics Of Morphometric Parameters Of The Gastric Mucosa In Polypragmasia With Anti-Inflammatory Drugs

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ABSTRACT

Morphological changes in the coolant and the pathogenesis of chronic gastritis of the disease have their own characteristics for different forms of gastritis [2.4]. 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).

Keywords: Morphological changes, NSAID

Relevance. To date, various changes in the gastric mucosa have been described that occur when exposed to various kinds of damaging factors: chemical, physical, infectious; at the same time, morphological changes in the structure of the gastric mucosa when exposed to various kinds of damaging agents have their own characteristics [1.3.5].

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 [7.9].

Morphological changes in the coolant and the pathogenesis of chronic gastritis of the disease have their own characteristics for different forms of gastritis [2.4]. 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 [6.8.10.11.12].

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 [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 [21.22.23.24].

It is known that neutrophil granulocytes play an important role in all stages of the development of peptic ulcer disease and are closely associated with many of its manifestations. 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 [25.27.28].

Currently, non-erosive and erosive-ulcerative lesions of the upper gastrointestinal tract occupy one of the first places in the structure of chronic diseases of the digestive organs [26.28], 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 [28.29].

To properly understand the essence of gastric ulcer, it is necessary to know 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 [26.27].

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.

In the modern world, there is rapid progress in the creation and introduction into practical healthcare of a huge number of medicines that, on the one hand, are able to cure or improve the patient's condition, on the other hand, cause significant harm to health. 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 [23.25].

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.

In order to improve the use of drugs in combinations to prevent simultaneous unjustified prescribing of drugs, 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 currently being updated.

The study of available literature data revealed a lack of information about the effect of polypragmasia on morphometric changes in the gastric mucosa, namely, structural and

morphological changes in the structure of the stomach.

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 66 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.

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 56.3%; in the pyloric department, this indicator is highest in 6-month-old animals and is 44.4%. 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.

In the group of rats with chronic irradiation, the rate of increase in the thickness of the mucous membrane in the cardiac and pyloric sections of the stomach is the highest at 6 months of age, equal to 68.0% and 21.0%, respectively. This indicator is the lowest in irradiated animals of 12 months of age, amounting to 14.3% and 13.9% in both parts of the organ, respectively.

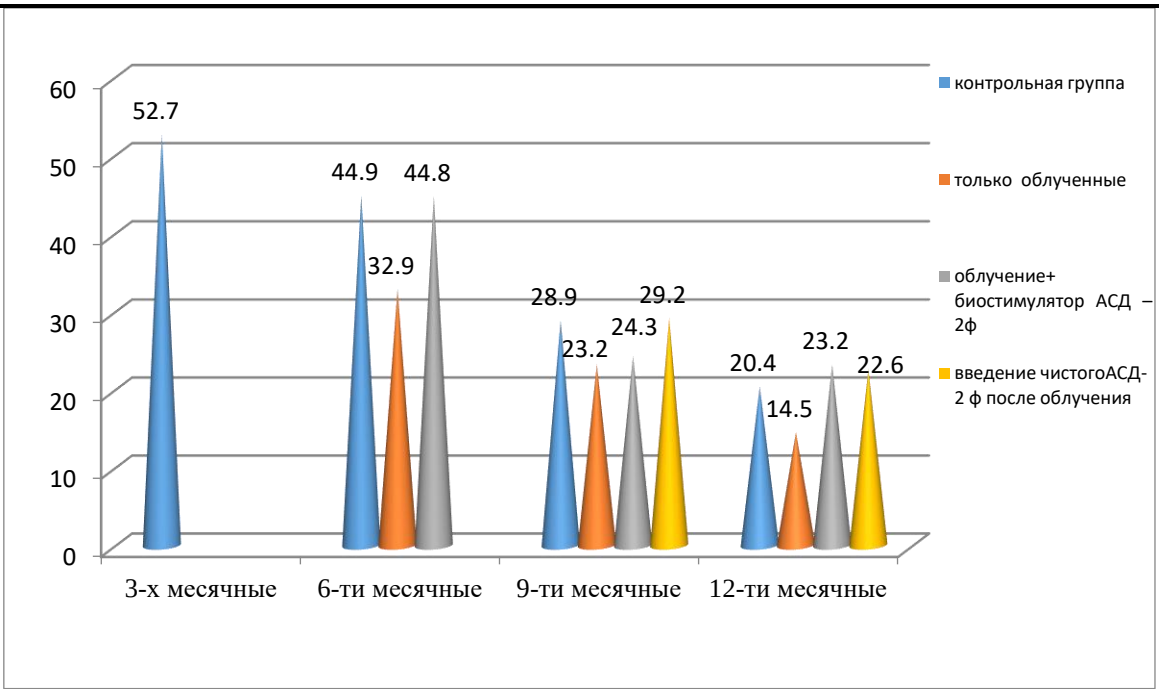

Fig. 1. Comparative characteristics of the growth rate of the wall thickness of the pyloric part of the stomach in normal, with chronic radiation sickness and with various corrections with a biostimulator, (%).

In animals of the third group, who received a biostimulator 0.1 ml in parallel with irradiation, the greatest increase in the thickness of the mucous membrane in the cardiac and pyloric sections of the stomach was registered at 6 months of age, amounting to 38.8% and 40.1%, respectively. The smallest increase in this morphometric indicator in both parts of the organ is noted at 9 months of age and is equal to 20.9% and 19.2%, respectively.

The greatest rate of increase of the thickness of the mucosa in the cardial part of the stomach of rats, 0.1 ml after irradiation, observed at the age of 9 months and equal to 29.5%; belorusskom Department this figure is the highest at the age of 12 months and is 34,0%.

The figure in the cardiac Department is the smallest 12-month rats were 18.3%, in the pyloric - to 9-month age, making - of 22.5%.

The increase in the height of mucosal folds in the control group animals in both parts of the stomach was greatest in animals aged 3 months and amounted to 52.7% and 59.1%, respectively. The smallest increase in this morphometric parameter in both the cardiac and pyloric sections was detected in 12-month-old animals and was equal to 27.9% and 5.7%, respectively.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.

In the group of animals with chronic radiation sickness, there is a decrease in the number, size and shape of lymphoid formations. In addition, lymphoid formations localized in their own mucosal plate in the area of the transition of the stomach to the duodenum 12 are characterized by a decrease in their density towards the duodenum 12. Comparison of the number of lymphoid formations of the stomach wall of irradiated animals with similar data of the control group showed a decrease in their number by 60-65%. Lymphoid formations are significantly reduced in size and acquire an irregular shape. In this group of white rats, lymphoid formations of the submucosal basis of the cardiac part of the stomach wall are represented by 1-2-row chains of small lymphocytes, tightly adjacent to each other and to their own plate of the mucous membrane. In the pyloric department, these formations are revealed in the form of 2-row chains of small and clusters of 3-4 lymphocytes located under the bottom of glandular structures. 1-2-row

chains of lymphocytes are tightly attached to the walls of the vessels (Fig.2).

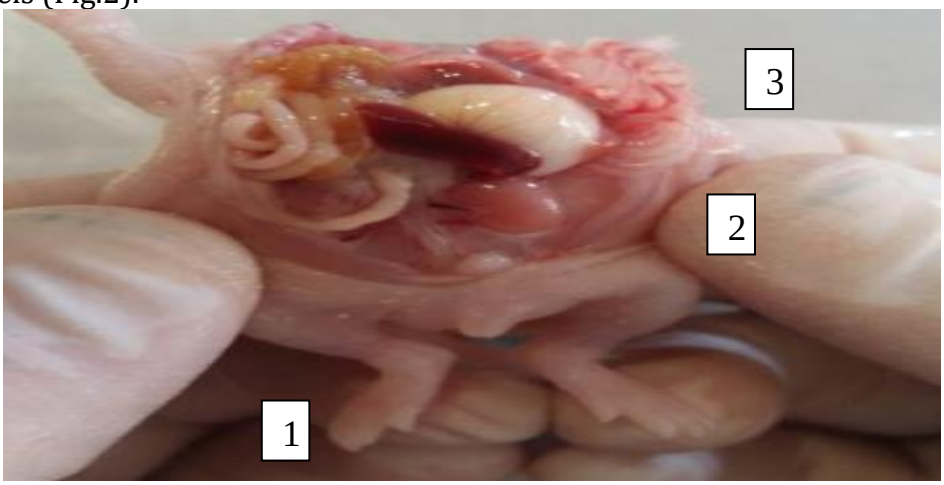

Fig. 2. The structure of the cardiac stomach of 6-month-old white rats with chronic radiation sickness. (1 - mucous membrane, 2 - submucosal base, 3 - muscle layer. Staining with hematoxylin-eosin. Ok.10xob.40).

In laboratory animals treated in parallel with irradiation, an increase in the number of lymphoid formations of the gastric wall and an approximation of their number to the limits of the norm – 90-95% was found.

During the experiment, it was found that in white rats treated after irradiation, the number of lymphoid formations of the submucosal base approaches 80%. The own plate of the cardiac part of the stomach contains lymphoid formations, which are represented by a 2-row chain of small lymphocytes, with a tight fit of cells to each other. The presence of clusters of 4-5 small lymphocytes in the folds of the mucous membrane was noted. In the mucous membrane of the pyloric department, a 1-row chain of small lymphocytes is found, as well as a cluster of lymphocytes from 3-4 cells located under the bottom of the glands.

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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