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Morphological Changes of The Gastric Mucosa and Homeostasis Characteristics In the Patients with Gastropathies Of Different Etiology

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Abstract: This study includes 78 patients with gastropathy of various etiology on the basis of which they were divided into groups with signs of inflammatory morphological changes and expressions of atrophy of the gastric mucosa and the parameters of homeostasis (protein metabolism, electrolyte levels in the blood, enzymes of the pancreatic gland, indicator enzymes, hormonal level and coagulogram) were studied. The most marked changes in the homeostasis parameters looking like dysproteinemia, increase in the level of thyroid hormones, reduction of the prothrombine index) was noted in the group of patients with multifocal atrophic gastritis. The suggestion has been proposed that the above-shown changes of these parameters may be predictors of the pretumor neoplasms.

Key words: Gastropathy, gastric mucosa, morphology, homeostasis.

INTRODUCTION

The etiology of stomach diseases is diverse [1,2]. There are many known causes of the pathology of the gastroduodenal zone [5,6]. The most common etiological factors leading to certain damage to the stomach include: Helicobacter pylori infection, intake of non-steroidal anti-inflammatory drugs and corticosteroids, stress, alcohol abuse, chemical and physical gastric duodenal trauma, disseminated intravascular coagulation syndrome, burns (Kurling's ulcers), renal and hepatic failure (hepatogenic ulcers), diabetes mellitus (coma, ulcerogenic action of insulin), diseases of the neuroendocrine system, Zollinger-Ellison syndrome, hyperparathyroidism, oncological diseases, including stomach tumors [8,9]. In recent years, more and more attention has been drawn to an increase in the incidence of stomach diseases against the background of its vascular pathology [3,7], in patients with diseases of the cardiovascular system, developmental anomalies and pathology of blood vessels

supplying the stomach, vascular tumors of the stomach as a result of the development of portal hypertension against the background of the development of vasculitis [10,11].

Purpose of the study

In light of the above, it is of interest to study the morphological picture of the gastric mucosa (GLC) and homeostasis indicators in patients with gastropathies of various etiologies. This work is devoted to the solution of this issue.

METHODS

78 patients with gastropathies of various etiology were under observation. Observation groups were compiled for various inflammatory signs of morphological changes in the coolant in patients with gastropathies, the criterion of which was the presence of atrophy (group 1-clinical norm = 22 patients, 2-non-atrophic gastritis = 28 patients, 3-fundal atrophic gastritis = 18 patients, group 4 = multifocal

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atrophic gastritis = 10 patients). In addition, the patients were divided into inheriting groups depending on the presence of atrophy in different parts of the stomach: morphological norm (n = 22), atrophy of the body of the stomach (n = 18), atrophy of the antrum (n = 20), total atrophy (n = 18). The following indicators of homeostasis were studied: protein by electrophoretic separation, the level of electrolytes (sodium, magnesium in) blood by the method of flame photometry, the values of pancreatic enzymes (trypsin, lipase) in accordance with the recommendations of Menshikov V.V., indicator enzymes

(cholinesterase) according to the generally accepted method, hormonal profile (T3, T4, fasting insulin) using test kits for ELISA 0, coagulogram (time of plasma recalcification, prothrombin index, fibrinogen). The obtained digital data were processed in accordance with the generally accepted methods of variation statistics using Student's criteria.

RESULTS AND DISCUSSION

The characteristics of homeostasis indicators in various types of inflammatory diseases of the gastroduodenal zone are presented in Table 1.

Indicators	Norm	Groups			
		Clinics kaya norma (n = 22)	Non-atrophic gastritis (n = 28)	Fundal atrophic gastritis (n = 18)	Multifocal atrophic gastritis (n = 10)
1	2	3	4	5	6
Protein metabolism					
Total protein, g / l	65-80	69,63±1,64 (p=41)	68,09±1,83 (p=9)	70,45±10,35 (p=2)	68,42±4,17 (p=5)
Globulins, g / l	17-35	25,49±0,88 (p=37) ¹	22,56±0,85 (p=9)	24,67±3,28 (p=3)	23,67±2,70 (p=6)
Alpha-1 globulins,%	2,5-5	3,11±0,15 (p=47) _{1,2,3}	2,70±0,14 (p=22)	2,60±0,40 (p=6)	2,48±0,11 (p=25)
Alpha-2 globulins,%	7-13	9,33±0,46 (p=47) ²	9,68±0,45 (p=22) ⁴	11,73±1,27 (p=6) ⁶	9,12±0,36 (p=25)
Beta globulins,%	8-14	14,09±0,54 (p=47)	13,96±0,66 (p=22)	13,87±1,02 (p=6)	13,61±0,51 (p=25)
Gamma globulins,%	12-18	18,23±0,76 (p=47)	17,20±0,92 (p=22)	20,07±2,51 (p=6)	17,79±1,02 (p=25)
Electrolytes					
Na ⁺	16-22	18,51±0,3	17,00±0,41	18,83±1,22	26,88±7,5

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erythrocytes, mol / l		4 (p=49) ^{1,3}	(p=12) ⁵	(p=6)	5 (p=16)
Mg ⁺² mmol / l	0,7-1,05	0,78±0,05 (p=102) ²	0,74±0,02 (p=30)	0,70±0,03 (p=8)	0,74±0,02 (p=37)
Pancreatic enzymes					
Trypsin, mmol / (chl)	0-0,35	0,24±0,02 (p=43)	0,21 ±0,02 (p=33) ⁵	0,23±0,05 (p=8)	0,28±0,03 (p=33)
Lypase,%	10-20	14,40±0,6 9 (p=86) ²	14,49±0,60 (p=61) ⁴	18,00±2,11 (p=11) ⁶	13,84±0,7 3 (p=56)
Indicator enzymes					
Cholinesterase, µmol / (shl)	45-96	46,53±1,7 3 (p=62) ²	46,03±2,08 (p=45) ⁴	57,60±6,44 (p=9) ⁶	46,70±2,0 2 (p=48)
Hormonal profile					
T ₃ , nmol/1	1,2-2,7	1,58±0,25 (p=71)	1,54±0,06 (p=26)	1,48±0,08 (p=7)	1,48±0,08 (p=27)
T ₄ , nmol/1	58-151	91,45±3,3 6 (p=70) ^{1,3}	106,19±3,7 7 (p=26)	95,47±9,25 (p=7)	100,33±4, 92 (p=27)
Insulin fasting		15,16±7,3 2 (p=12) ^{1,3}	6,03±0,88 (p=14)	Informativ e (p <5)	6,55±1,70 (p=13)
Coagulogram					
Time recalcification of plasma, sec	60-120	86,11±2,70 (p=103) ¹	80,68±2,7 9 (p=40)	84,40±5,42 (p=10)	82,53±2,9 2 (p=43)
Prothrombin index,%	80-105	93,96±1,12 (p=113) ³	94,30±2,1 8 (p=43) ⁵	97,92±3,53 (p=12)	98,41±1,5 5 (p=46)

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Fibrinogen, g / l	2-4	3,63±0,10 (p=114)	3,68±0,18 (p=43)	3,60±0,26 (p=12)	3,45±0,11 (p=46)
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1- significant difference ($p < 0,05$) between groups «1» и «2»; 2 - between groups «1» и «3»; 3- between groups «1» и «4»; 4 - between groups «2» и «3»; 5 - between groups «2» и «4»; 6 - between groups «3» и «4».

It should be noted that the studied parameters of the homeostasis of the organism were mainly in the range of reference, normal values. However, within these limits, there were significant differences among the studied groups. In non-atrophic gastritis, in comparison with the norm, there was a relative increase in the T4 index and a decrease in alpha1-globulins, Na + erythrocytes, fasting insulin and plasma recalcification time ($P < 0.05$).

In case of fundal atrophic gastritis, in comparison with the norm, there was a relative increase in the level of lypase, cholinesterase and - a decrease in the indices of alpha1-, alpha2-globulins, Mg + 2 blood. At the same time, in comparison with non-atrophic gastritis, this condition was characterized by a higher level of alpha2-globulins, lypase and cholinesterase.

Multifocal atrophic gastritis was characterized, in comparison with the norm, by a relatively increased level of Na +, erythrocytes, T4, thrombin index, decreased alpha 1-globulin and fasting insulin indices. In comparison with non-atrophic gastritis, this pathology was

characterized by a significant relative increase in the level of cholinesterase, a decrease in alpha2-globulins and lypase, and in comparison with fundic atrophic gastritis - a significant decrease in alpha2-globulins and lypase ($p < 0.05$).

Thus, the features of homeostasis indicators in the surveyed groups were:

- protein metabolism - a relative dysproteinemia of a type of hypoalpha globulinemia in the group of multifocal atrophic gastritis;
- hormonal profile - an increase in the level of thyroid hormones in the group of multifocal atrophic gastritis;
- electrolytes - an increase in the concentration of intracellular sodium in the group of multifocal atrophic gastritis and its decrease in the group of non-atrophic gastritis.

Further, we investigated the indicators of systemic homeostasis for various variants of atrophy. The research results are presented in table 2.

Table2

Dependence of homeostasis indicators on the presence of atrophy in various parts of the stomach

Sign	Norm	Groups			
		Morphological norm (p = 22)	Body atrophy of the stomach (p = 28)	Antrum atrophy (p = 20)	Тотальная атрофия (p=18)
1	2	3	4	5	6
Protein metabolism					

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Albumin, g / l	35-55	45,00±1,09 (p=13)	198,00±153,03 (p=3)	47,60±2,40 (p=5)	50,33±4,84 (p=3)
Globulins, g / l	17-35	24,00±1,13 (p=13) ²	24,67±3,28 (p=3)	27,40±1,40 (p=5)	17,00±5,00 (p=2)
Alpha-1 globulins,%	2,5-5	2,66±0,09 (p=44) ²	2,71±0,36 (p=7)	2,32±0,11 (p=22)	2,80±0,31 (p=5)
Alpha-2 globulins,%	7-13	9,89±0,46 (p=44) ³	10,97±1,32 (p=7) ⁵	9,41±0,41 (p=22) ⁶	8,44±0,41 (p=5)
Gamma globulins,%	12-18	16,48±0,57 (p=44) ^{1,2,3}	19,49±2,20 (p=7)	18,78±0,98 (p=22) ⁶	13,08±1,47 (p=5)
Electrolytes					
K ⁺ erythr., mmol / l	78-110	84,24±2,02 (p=34)	86,00±1,95 (p=7) ⁴	80,45±4,08 (p=11)	87,67±4,05 (p=6)
Na ⁺ erythre, mmol / l	16-22	17,79±0,40 (p=33) ²	18,86±1,03 (p=7) ⁴	30,73±10,92 (p=11) ⁶	18,67±1,09 (p=6)
Mg ²⁺ , mmol / l	0,7-1,05	0,73±0,01 (p=58) ^{1,3}	0,70±0,02 (p=9) ⁴	0,75±0,02 (p=31) ⁵	0,68±0,04 (p=9)
Pancreatic enzymes					
Ing.Tryrsin		27,91±0,65 (p=82) ¹	24,42±1,54 (p=11) ⁴	27,77±1,32 (p=25)	26,38±1,51 (p=10)
Lypase,%	10-20	15,19±0,82 (p=123) ¹	18,43±2,10 (p=14) ^{4,5}	13,77±0,80 (p=47)	14,29±1,65 (p=14)
Indicator enzymes					
Holineste times, μmol / (shl)	45-96	47,95±1,54 (p=89) ¹	57,45±5,32 (p=11) ^{4,5}	46,54±2,28 (p=42)	47,16±2,90 (p=10)
Coagulogram					
Prothrombin new index,%	80-105	95,45±1,35 (p=86) ²	97,23±3,32 (p=13)	99,31±1,58 (p=39)	93,91±4,32 (p=11)

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1 - significant difference ($p < 0,05$) between groups «1» и «2»; 2 - between groups «1» и «3»; 3 - between groups «1» и «4»; 4 - between groups «2» и «3»; 5 - between groups «2» и «4»; 6 - between groups «3» и «4».

According to the data in Table 2, during the development of CO atrophy of the gastric body, there was an increase in the level of gamma globulins, lipase, cholinesterase, a decrease in the concentration of Mg^{2+} and inhibitors of trypsin in the serum of peripheral blood compared with the norm ($p < 0,05$). With the development of antrum mucosa atrophy, along with an increase in the amount of gamma globulins, there was a significant increase in the concentration of Na^{+} erythrocytes, the prothrombin index and a decrease in the level of alpha1-globulins in the blood compared to the norm ($p < 0,05$). The development of total atrophy led to the confirmation of the revealed patterns of changes in homeostasis: the level of gamma globulins increased, while the concentration of alpha2-globulins and Mg^{2+} blood serum significantly decreased ($p < 0,05$).

Noteworthy is the difference in homeostasis indicators in the development of atrophy in the body and antrum of the stomach. Thus, atrophy of the stomach corpus was characterized by an increased content of K^{+} erythrocytes, lipase and cholinesterase, and a decreased content of Na^{+} erythrocytes, Mg of peripheral blood and inhibitors of trypsin, compared with atrophy in the antrum ($p < 0,05$).

Atrophy of the CO of the body of the stomach also differs from total atrophy. For example, in the first case, there was an increased content of alpha2-globulins and cholinesterase in the blood compared to the second. Atrophy of the mucous membrane of the antrum of the stomach has the following differences from total atrophy: a significantly higher content of alpha2-globulins, Na^{+} erythrocytes and Mg^{2+} peripheral blood.

The research carried out made it possible to distinguish the following patterns:

- For the protein profile - in the group of antrum atrophy, dysproteinemia was observed with a type of hypergamma globulinemia and hypoalpha globulinemia, while total atrophy

was characterized by a maximum decrease in gamma globulins (up to 13 g / l) and alpha2-globulins (up to 8, 4 g / l).

- The water-electrolyte balance was characterized by the maximum concentration of magnesium (up to 0.77 mmol / l) and intracellular sodium (up to 40 mmol / l) with antral atrophy.

- In the study of the blood coagulation system, the maximum prothrombin index (up to 99.5%) was also observed in the group of antral atrophy, and the minimum in total atrophy.

CONCLUSIONS

The obtained results of the conducted research allowed us to draw the following conclusions:

1. Violation of protein metabolism in the form of dysproteinemia is observed in patients with multifocal atrophic gastritis and with manifestations of antrum atrophy and total atrophy of the coolant.

2. An increase in the level of thyroid hormones in the blood was noted only in the group of patients with multifocal atrophic gastritis.

3. An imbalance in the production of sodium and magnesium electrolytes was found in a group of patients with multifocal atrophic, non-atrophic gastritis with signs of antral atrophy.

4. Violation of the coagulogram in the form of changes in the prothrombin index is observed only in the group of patients with antral and total atrophy.

5. The indicated violations of the studied parameters can be precursors of predo-tumoral formations.

REFERENCES

1. Vertkin A.L., Zayratyants O.V., Vovk E.I. Damage to the stomach and duodenum in patients with acute coronary syndrome. //Therapist. - 2005. - 1.66-70.
2. Zayratyants O.V., Kolobov S.V., Khokhlova E.E., Rotchikova E.A. Acute erosive and

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- ulcerative gastroduodenal lesions in therapeutic and neurological patients. // Sat. scientific. works of the conference in memory of Yu.L. Perov / Ed. acad. RAS and RAMS V.A. Tkachuk. - M.: Publishing house of Moscow State University. 2009. - p. 35-43.
3. Zvenigorodskaya L.A., Samsonova N.G., Rarfenov A.I., Khomeriki S.G. Clinical, functional and morphological changes in the colon in patients with chronic abdominal ischemia // *Difficult Patient*. - 2007. - T.5, No. 15-16. - p. 323.
 4. Kolobov S.V., Vertkin A.L., Zayratyants O.V., Rotchikova E.A., Mishutchenko O.P., Khokhlova E.E. Acute erosive and ulcerative lesions of the upper gastrointestinal tract in patients with myocardial infarction. // *Coll. proceedings of the II Congress of the Russian Society of Pathologists*. - M., 2006. - T.1. - p.70-71.
 5. Kolobov S.V., Zayratyants O.V., Vovk E.I., Rotchikova E.A., Mishutchenko O.P., Khokhlova E.E. Acute erosive and ulcerative lesions of the upper gastrointestinal tract. // *Sat. works "Topical issues of morphogenesis in health and disease"*. - M.: Research Institute of Human Morphology, Russian Academy of Medical Sciences, 2006. - P.17-18.
 6. Khokhlova E.E., Kolobov S.V., Zayratyants O.V., Zayratyants G.O. Acute erosive and ulcerative gastroduodenal lesions and bleeding in patients with a therapeutic and neurological profile. // *Coll. proceedings of the III Congress of the Russian Society of Pathologists*. - Samara: SamSMU, 2009. - p. 325.
 7. Yarema I.V., Kolobov S.V., Zayratyants O.V., Khokhlova E.E., Rotchikova E.A. Acute erosive and ulcerative gastroduodenal lesions in patients with ischemic heart disease, cerebrovascular disease and chronic obstructive pulmonary disease. // *Surgeon* - 2009. - 12-513.
 8. Kantorova I., Svoboda P., Scheer P. et al. Stress ulcer prophylaxis in critically ill patients: a randomized controlled trial. *Hepatogastroenterology*. - 2004. - 51(57). 75761.
 9. Pagnoux C, Mahr A, Cohen P, Guillevin L. Presentation and outcome of gastrointestinal involvement in systemic necrotizing vasculitides: analysis of 62 patients with polyarteritis nodosa, microscopic polyangiitis, Wegener granulomatosis, ChurgStrauss syndrome, or rheumatoid arthritis associated vasculitis// *Medicine (Baltimore)*, -2005, -Yol, 84, -2, - P, 11528, -PMID: 15758841.
 10. Steinberg K.P. Stressrelated mucosal disease in the critically ill patient: risk factors and strategies to prevent stressrelated bleeding in the intensive care unit // *Crit. Care Med*, - 2002, - 30(6), - Suppl, 3624.