

ISSN 1477-9315



JOURNAL OF  
**ENVIRONMENTAL  
HEALTH RESEARCH**

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Journal of environmental health research.

ISSN 1477-9315 <http://www.jehr-online.org/>

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## **A modern view on the course of ulcerative cholera in children**

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**Abstract:** The last quarter of the 20th century was marked by progress in pediatric gastroenterology, which led to significant advances in the diagnosis, treatment and prevention of diseases of the digestive system in children.

**Keywords:** children, digestive system, diseases.

Their peak in frequency and prevalence of diseases of the digestive system is reached in adolescence: at 13-17 years old in males, at 12-16 years old in females [Sharapova V.I., Tsaregorodtsev A.I. Rost.vest. perinatology and pediatrics; 4-4-10].

The most common form of damage to the digestive system is chronic gastroduodenal diseases, accounting for 50% of the number of children with gastroenterological pathology and in 7% of cases transforming into peptic ulcer [A.A. Baranov, 2002; L.N. Tsvetkova et al., 2009].

Peptic ulcer (PU) is a chronic disease with a polycyclic course, characterized by the appearance of a peptic ulcer in the mucous membrane of the stomach and / or duodenum and, as a rule, occurring against the background of gastritis caused by *H. pylori* infection [ Aruin, L. I. *Helicobacter pylori*: how way one pathogen causes different diseases / L. I. Aruin // Experiment. and clinical gastroenterol. - 2004. - 1. - 36 - 41].

Peptic ulcer disease (PU), despite its centuries-old history and progress made in the study of etiology and pathogenesis, as well as the development of the basic principles of diagnosis and treatment, continues to be of interest, both from a scientific and practical point of view, due to its prevalence, frequent recurrence , the development of severe complications leading to a decrease in the quality of life of patients of any age [Tsvetkova L.N., Filin V.A., Nechaeva L.V. Peptic ulcer in children: features of the course and choice of drug therapy at the present stage. Ros.vesn. perinatology and pediatrics. 2008; 53 (5): 36–42].

Peptic ulcer of the stomach and duodenum (DU) is one of the most common diseases of the gastrointestinal tract, and the choice of adequate schemes for its treatment is one of the most urgent problems of modern gastroenterology [Maev I.V., Samsonov A.A. Peptic ulcer of the duodenum: different approaches to modern conservative therapy. Gastroenterology 2004; 6(1): 10-15. ].

According to numerous epidemiological studies conducted in various countries, it can be argued that there is a steady increase in morbidity, disability and mortality from this pathology [Aruin, L. I. *Helicobacter pylori*: how one pathogen causes different diseases / L. I. Aruin // Experiment. and wedge. gastro-enterol. - 2004. - 1. - 36– 41. 2. Burakov, I. I. Results of long-term monitoring of patients with peptic ulcer associated with *Helicobacter pylori* after eradication of the microorganism / I. I. Burakov // Experiment. and clinical gastroenterol. - 2002. - No. 3. - S. 45 - 48)



In the International Classification of Diseases of the 10th revision, the term PU is absent, which reflects two modern approaches to understanding the essence of the disease: on the one hand, the consideration of peptic ulcer as a heterogeneous group of diseases united by the presence of a chronic ulcer in the gastroduodenal zone, and on the other hand, as a nosological unit (diseases) with some generalized view of pathogenesis, clinical manifestations and standardized therapy. Both of these approaches are reflected in the definition of the disease: "Peptic ulcer (synonyms: duodenal ulcer, gastric ulcer) is the formation of an ulcer in the stomach or duodenum, which is the result of an imbalance between the protective factors of the mucous membrane and various factors that damage the mucous membrane, understood as "etiology » [Ferri'sClinicalAdvisor:InstantDiagnosisandTreatment, 2003 ed., Copyright © 2003 Mosby, Inc. [www.mdconsult.co](http://www.mdconsult.co)].

The etiological factors of PU have been reviewed and refined many times. The expression of Karl Schwartz "No acid - no ulcer", made by him in 1910, was relevant until 1989, when D. Y. Graham changed it to "No *Helicobacter pylori* - no ulcer" [Graham D. Y. *Campylobacterpyloriandpepticulcerdisease // Gastroenterology*. 1989 Vol. 96. R. 615-625.] Although the statement of G. N. Tytgat, made by him in 1995, should be considered more correct today: "No *H. pylori* - no *H. pylori*-associated peptic ulcer". It is the most successful and meets modern requirements [Maev IV, Samsonov AA Duodenal ulcer: different approaches to modern conservative therapy // *ConsiliumMedicum*. 2004. No. 1.S. 6–11.]

The leading etiopathogenetic factor in the formation of gastroduodenal pathology is still *Helicobacter pylori* infection: in children with duodenal ulcer it occurs in 87% of cases, and in children with gastroduodenitis - in 42% [R.A. Fayzullina, E.V. Abdullina Pathogenicity and virulence factors of *Helicobacter pylori* and their role in the development of *Helicobacter*-associated gastroduodenal pathology. - *Practical medicine*, '1 (49) March 2011 p74-78].

*H. pylori* is found on all continents, in all surveyed populations: the total infection of the world's child population reaches 60% and varies in different regions of the planet. (Thiodleifsson B., Asbjorndottir H., Sigurjonsdottir R.B. et al. Seroprevalence of *H. pylori* and *cagA* antibodies in Iceland, Estonia and Sweden. *Scand. J. Infect. Dis*. 2007; 39: 683-9.)

Pediatric aspects of *H. pylori* infection were first discussed in 1997 in Estoril (Portugal) at the initiative of the European Group for the Study of *H. pylori*, then at the second held in Budapest (1998) and in Helsinki the third (1999) meetings of expert pediatricians, as well as during the adoption of the Maastricht-3 Consensus [Shcherbakov P.L., Baranov A.A., Korsunsky A.A. Treatment of *Helicobacter pylori*-associated diseases. In: *Helicobacteriosis and diseases of the digestive system in children*. M.: ID Medpraktika-M, 2002. S. 125-139].

At present, the classical understanding of the pathogenesis of PU has not lost its relevance, which is based on an imbalance between the factors of aggression and defense, as well as its influence on the clinical course of the disease. As the main factor of aggression in DU, the role of increased secretion of hydrochloric acid, which is caused by hypertrophy of the glands and hyperplasia of parietal cells, is

primarily discussed [Lysikov Yu.A., Goryacheva O.A., Tsvetkova L.N., Krasavin A.V., Gureev A.N., Tsvetkov P.M. Clinical and morphological features of duodenal ulcer in children // Pediatrics. 2011. Volume 90. No. 2. S. 38–42.].

A certain role in the formation of DU and the features of its clinical course is assigned to inflammatory changes in SOD. The most important protection factors include the secretion of mucus and bicarbonates of the coolant and DC. Discuss the role of prostaglandins, gastrin and other regulators of hydrochloric acid secretion [Isakov V.A., Domaradsky I.V. Helicobacteriosis. - M.: ID Medpraktika-M, 2003. - 412 p. 4. Osadchuk A.M., Komarov F.I., Osadchuk M.A. et al.]

Among the etiological factors that play a decisive role in the development of peptic ulcer (peptic ulcer of the stomach and duodenum), it is first of all necessary to highlight the role of heredity. In the families of sick children, parents or close relatives often suffer from chronic diseases of the gastroduodenal zone [Children's gastroenterology (selected chapters) / Ed. A.A. Baranova, E.V. Klemanskaya, G.V. Rimarchuk. - M., 2002. - 592 p.]. The role of hereditary burden is especially great in duodenal ulcer, which is inherited in an autosomal dominant or autosomal recessive type, not sex-linked. According to different authors, burdened heredity can be traced in 30–70% of patients with PU [Belousov Yu.V. Helicobacter pylori infection and intragastric acidity in children. - 2007. - № 2//// Selected lectures on gastroenterology / Ed. V.T. Ivashkina, A.A. Sheptulina. - M.: MEDpress, 2001. - 88 p.].

PU in close relatives of sick children is detected in 35.8-45.4% of cases, and it is observed more often on the paternal side. Children often show up earlier than their parents (preemption syndrome). To proven genetic factors J.F. Rotter, M.J. Grossman (1980) include indicators of maximum secretion of hydrochloric acid, the content of pepsinogen I in the blood serum, increased release of gastrin in response to food [T.Ikenoue, S. Maeda, K. Oguraetal. Determination of jfyelicobacter pylori virulence by Simple Gene Analysis of the Cag Pathogeneticity Island. Clinical diagnostic laboratory immunology. 2001. Vol 8 (1). P 181-186].

A number of researchers have noted the role of secondary immunodeficiency in the pathogenesis of PU. It was established in patients (when compared with healthy people) the presence of a combined form of secondary immunodeficiency with a predominant inhibition of the T-cell immunity, as well as the ineffectiveness of the processes of disintegration of the microbial antigen in phagocytic cells [Zimmerman Y.S., ULCER: ACTUAL PROBLEMS OF ETIOLOGY, PATHOGENESIS, DIFFERENTIATED TREATMENT. Clinical medicine - MN № 8 / volume 90 / 2012. C11-15].

An important role in the pathogenesis of PU is given to the psycho-emotional factor (stress, anxiety, mental maladjustment, etc.) (Meucci, Gianmichele M.D, Battista., Abbiati, Carla M.D, Aurora F.D - Journal of Clinical Gastroenterology July 2000 Volume 34- Issue 1 pp 42 -27). Psychoemotional, psychosocial stress is one of the important "disturbing" factors that disrupt the activity of the functional systems of the body [Isakov V.A., Domaradsky I.V. Helicobacteriosis. - M.: ID Medpraktika-M, 2003. - 412 p. 4. Osadchuk A.M., Komarov F.I., Osadchuk M.A. et al.235-245] . It

has been established that in children with PU patients there are violations of interpersonal relationships, emotional deprivation is noted, which manifests itself in adulthood by inflexibility in responding to the requirements placed on them, lack of competitive skills. During a special examination in patients with PU, various psychopathological disorders are determined, including psycho-vegetative syndrome, and astheno-depressive symptoms prevail. Psychogenic factors play the role of a “triggering” mechanism of psychosomatic disease, and the choice of a target organ (stomach, duodenum) is explained by the presence of hereditary burden for PU and ready-made biological determinants [Zimmerman Ya.S., Belousov F.V., Tregubov L.Z. areas of patients with peptic ulcer. CLINICAL MEDICINE - 2004 T 82 No. 3 pp. 37-42].

Vegetative reactivity is the trajectory of the body's autonomic reactions in response to external and internal stimuli. Assessment of vegetative reactivity can be carried out using CIG using a clino-orthostatic test (COP). After CIG recording in the initial position, the teenager actively moves to the ortho-position, and in this position, 100 consecutive cardio complexes are also recorded, followed by their calculation. The ratio of IN 2 (ortho - position) to IN 1 (initial position) allows you to evaluate the VR. When evaluating VR, it is necessary to take into account the “initial level law”, according to which the higher the level, the more active and stressed the system is and the smaller the response is possible under the action of perturbing stimuli. If the initial level is sharply changed, then the perturbing agent can cause a paradoxical or antagonistic reaction with the opposite sign, i.e., the magnitude of activation is related to the prestimulus level.

Three variants of VR are possible: normal (sympathicotonic); hypersympathicotonic, considered as an inadequate response of the sympathoadrenal system to COP; asympathicotonic, which is the result of an overstrain of regulatory systems and the impossibility of further strengthening the activity of the sympathetic division of the ANS, which always occurs when moving to a vertical position. Table 7 presents the criteria for assessing VR in relation to IN2/IN1 in adolescents, depending on the initial autonomic tone.

Table 1.

Criteria for assessing VR in relation to IN2/IN1 in adolescents, depending on the initial autonomic tone.

Vegetative tone	IN1 at rest, arb. units	Вегетативная реактивность		
		normal	hyper sympathetic-tonic	sympathetic-tonic
Vagotonia	30	1-3	>3	<3
Eitonia	31 – 60	1-2,5	>2,5	<1
	61 - 90	0,9-1,8	>1,8	<0,9
Sympathetic-tion	91 - 120	0,7-1,5	>1,5	<0,7

Electroencephalography is an informative method in the diagnosis of autonomic dystonia syndrome. Characteristic changes are an increased total power of

spontaneous EEG with the preservation of the correct zonal distribution, an increased coefficient of interhemispheric functional asymmetry of the power of the theta range, an increase in the overall wave of cognitive-negative deviation (when registering evoked endogenous cognitive potentials).

Thus, ANS dysfunction is considered as one of the leading pathogenetic factors of non-infectious gastrointestinal diseases, since such diseases occur as a result of the depletion of protective adaptive reserves.

### **Conclusions**

Peptic ulcer with its high recurrence rate is currently an important scientific and practical problem associated with its treatment. Elucidation of the pathogenesis of peptic ulcer has been and remains the subject of intensive research.

Therefore, a versatile study of physiological processes in patients with peptic ulcer, regulated by the nervous system, with the help of modern objective research methods is relevant and very promising.