



CLINICAL CHARACTERISTICS OF HELICOBACTER PYLORI ASSOCIATED GASTRODUODENAL PATHOLOGY IN CHILDREN

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Article history:	Abstract:
Received: September 20 th 2022 Accepted: October 24 th 2022 Published: November 30 th 2022	In recent years, gastroduodenal pathology, including chronic lesions of the upper gastrointestinal tract in children, has been a serious medical and social problem due to its high prevalence, clinical course, and high risk of early disability. Recently, the traditional understanding of the mechanisms of the formation of chronic pathology of the gastrointestinal tract in both adults and children has changed significantly.

Keywords: Helicobacter pylori ,gastroduodenal pathology

PURPOSE OF THE STUDY: study of clinical characteristics of associated gastroduodenal pathology in children

MATERIALS METHODS. A special monitoring chart for the condition of sick children with extragastric manifestations of Helicobacter pylori infection in school-age children has been developed. General clinical examination of patients included the collection of anamnesis, objective examination, instrumental and laboratory research methods. Consultation by narrow specialists (allergologist, hematologist, endocrinologist). When collecting a family history,

attention was paid to the health status of parents and close relatives: the presence of an allergic background, chronic and hereditary diseases, bad habits. Indicators of physical development were assessed according to the standards of growth and development of children recommended by WHO (2006).

RESEARCH RESULTS. We analyzed the clinical picture in 76 children aged 7 to 17 years with Helicobacter pylori associated gastroduodenal pathology. The control group included 30 children with chronic gastroduodenal pathology not associated with Helicobacter pylori of the same age

Table 1.
Distribution of children by sex and age

Nosology	Boys n=27	Girls n=49	7-11 лет		12-17	
			abs	%	abs	%
Chronic gastroduodenitis n= 76	27 (35,5%)	49 (64,5%)	15	19,7	61	80,3

Among the surveyed, the number of children of primary school age was (19.7%) aged 7-11 years, senior school age (80.3%). The number of girls prevailed 1.8 times. Analysis of the clinical manifestations of Helicobacter pylori associated gastroduodenal pathology revealed the features of chronic gastroduodenitis. It has been established that in the combined course of diseases, the duration of the anamnesis for the manifestation of symptoms of dyspepsia increases with the presence of Helicobacter pylori infection. It is noteworthy that patients with Helicobacter-associated chronic gastritis and gastroduodenitis of combined and isolated course, as well as peptic ulcer disease, presented almost the same complaints - abdominalgia, localized in the upper

abdomen and in the epigastrium, belching, heartburn, recurrent feeling nausea and bitterness in the mouth, extremely rarely - vomiting. Retrospectively, an ulcer history can be established in 2/3 (72.5%) of patients with duodenal ulcer. The features of helicobacteriosis occurring in combination compared with an isolated variant should include many times more frequently recorded symptoms - loss of appetite and a tendency to constipation - 11.6 times in the first group and 5.3 times in the second group, respectively. In the first group of patients, in 75% of cases, the presence of symptoms of gastric and intestinal dyspepsia in children was noted. Frequent involvement in the pathological process of the gallbladder in gastroduodenal pathology, especially duodenal

localization, is associated with the anatomical and embryonic unity of the duodenum and gallbladder.

This was manifested by various clinical signs: abdominal pain, nausea, heartburn, belching, bitterness in the mouth, bloating, loss of appetite, diarrhea or constipation, which are characteristic of this pathology. Pain characteristics included: localization; character; duration; prevalence; time of occurrence; dyspeptic disorders accompanying pain; provoking factors; elimination methods.

Complaints could be associated with diseases of the upper and lower digestive tract and gallbladder dysfunction of the hypomotor type (in 17% of cases). When analyzing the nature of abdominal pain, it was found that patients of the main group often complained of prolonged (25.0%; $P < 0.05$), aching (36.14%), dull (52.6%; $P < 0.05$) pain. The rest of the patients also revealed the presence of cramping and

stabbing, cutting pains. The average age (years) of the observed children was 11.3 ± 0.6 years. In 32 (56.1%) of the examined children with chronic gastroduodenitis associated with *Helicobacter pylori*, early clinical manifestations were more often late pain in the epigastrium, white coating of the tongue at the root, its swelling with imprints of teeth on the lateral surfaces, bad breath, pain during palpation in the epigastrium and pyloroduodenal region. In the clinical picture in children of all comparison groups, dyspeptic symptoms prevailed, they were noted in 82.9%, the same number of children complained of the astheno-vegetative spectrum (headaches, dizziness, weakness, fatigue).

All these symptoms, characteristic of *Helicobacteriosis* in most patients, appeared for the first time in 38 patients 1-2 months ago, in the remaining 7 patients - more than a year ago.

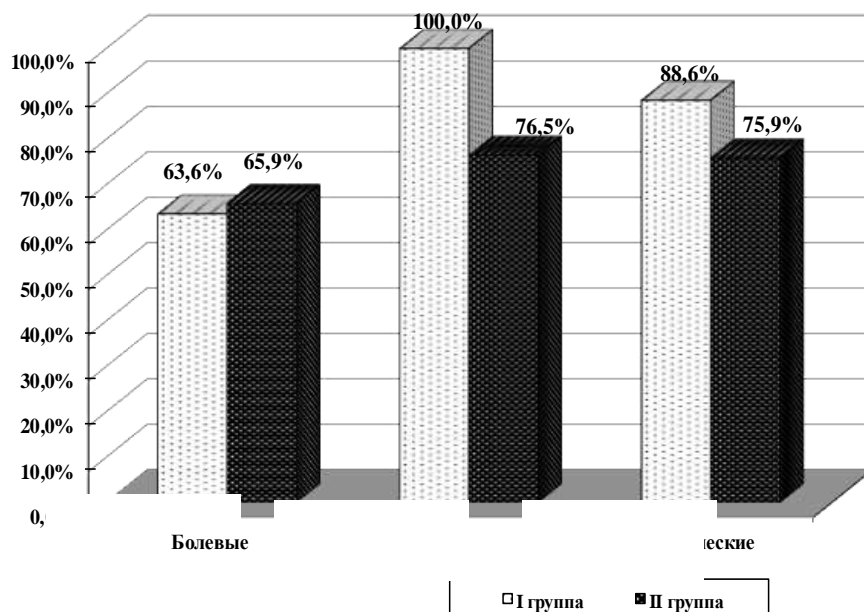


Fig. 1. The prevalence of pain, dyspeptic and asthenic symptoms in the comparison groups

69.8% of children from the first group complained of abdominal pain. Thus, in most patients of the first group, a combination of pain, dyspeptic and astheno-vegetative syndromes was observed. However, in the comparison groups there were certain differences in the prevalence and severity of these syndromes. In addition, it should be noted that in group I, abdominal pain was more intense, a quarter

of the children in this group indicated that they were worried about severe pain. Less intense pain is typical for children of the second group. In most patients of group I, the pain was constant (60.9% compared with 52.0% in group II), and mixed pains were noted by us only in patients of the first group. We also conducted a comparative analysis of dyspeptic symptoms in clinical groups.

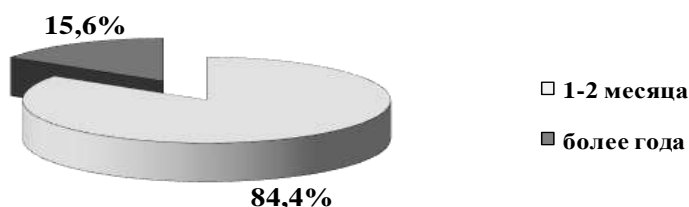


Fig. 2. Characteristics of the first group according to the duration of the anamnesis

When analyzing the nature of abdominal pain, it was found that patients of the main group often complained of prolonged (25.0%; $P < 0.05$), aching (36.14%), dull (52.6%; $P < 0.05$) pain. The rest of the patients also revealed the presence of cramping and stabbing, cutting pains.

When studying the prevalence of abdominal pain, it was found that in children with CGD, most often they radiated to the right shoulder blade (30.1%) and the right shoulder (22.8%), while in children of the comparison group - with the same frequency to the right (16.6%) and left shoulder blade (16.7%; $p < 0.01$)

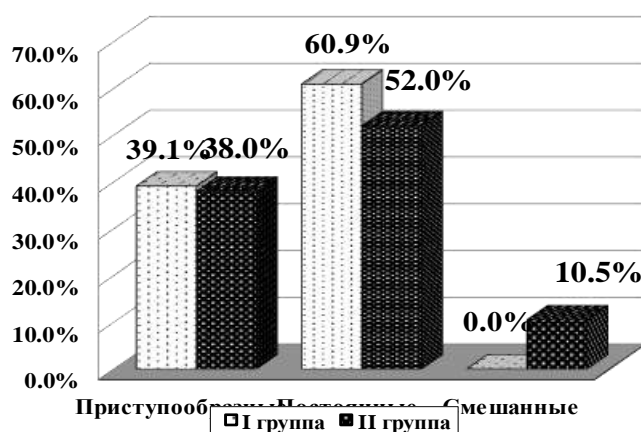


Fig. 3. Features of the pain syndrome according to the nature of pain in the comparison groups

Every third child (36.1%) of the main group noted that abdominal pain was of a girdle character, which was much more common than in the comparison group (26.6%). Attacks of abdominal pain in children of both groups were equally accompanied by symptoms of autonomic dysfunction in the form of

increased sweating and anxiety. In children of the first group, abdominal pain was accompanied by dyspeptic disorders from the upper digestive tract in the form of nausea (35.5%), belching (77.6%), heartburn (25%), bitterness in the mouth (21.1%), which was slightly



more common than in children of the comparison group (30.0%; 43.3; 16.7 and 26.7%, respectively).

We also conducted a comparative analysis of dyspeptic symptoms in clinical groups. It was found that dyspepsia in children with a aggravated allergic background is characterized by discomfort in the epigastrium and belching of air, and nausea and vomiting are less common in this group than in the first group, the differences are significant at $p < 0.05$.

In the group of children with *Helicobacter pylori*, (35.5%) children had nausea, belching in (77.6%), heartburn in (25%), bitterness in the mouth in (21.1%) cases, which was somewhat more common. than in children of the comparison group (30.0%; 43.3; 16.7 and 26.7%), respectively. Children of the main group associated the appearance of pain with

disturbances in the volume (55.6%) and qualitative composition of food in the form of the abuse of fatty foods (51.1%), which is significantly ($p < 0.001$) more often than in the comparison group (10.0 % and 13.0%), respectively.

Analysis of anamnestic data showed that a history of pregnancy pathology occurred in 39.4% (30 children), the most common complications were preeclampsia and toxicosis of pregnancy. Every fourth child had a history of an unfavorable course of childbirth: asphyxia, premature birth, or delivery by caesarean section. Particularly often, complications in childbirth occurred in children of the first group. Delivery by caesarean section was observed in 15 children from this group (19.7%), while in the second group they occurred in 4 (13.6%)

Table 2.
Clinical characteristics of abdominal pain syndrome in children with chronic gastroduodenitis depending on the association of *Helicobacter pylori*

Symptoms	Children Hp n=76		Children without HP n=30	
	abs.	%	abs.	%
according to the nature of the pain syndrome				
Cramping	14	18,4	2	6,7*
- Cutting	5	6,6	1	3,3
- Stab	11	14,4	2	6,7**
- blunt	40	52,6	8	26,7*
- aching	14	18,4	5	16,7
- Long lasting pain	19	25,0	2	6,7*
- In the right hypochondrium	14	18,4	2	6,7
by time of pain				
early pain	20	26,3%	3	10%
- late pain	25	32,9%	3	10%
-Before meals	23	30,3%	6	20%
-After meal	32	42,1%	8	26,7%
- Hungry pains	22	28,9%	4	13,3%
-After fatty foods	58	76,3%	5	16,7%
by localization of pain				
In the umbilical region	44	57,9	8	26,7*
In the epigastric region	56	73,7	6	20*
In the right hypochondrium	32	42,1%	1	3,3*
Pain in the right hypochondrium radiating to the back and right shoulder blade	8	10,5	-	-
Pain in the upper abdomen, which can be paroxysmal or constant aching	52	68,4	15	16,7*

Note: * significance value between compared groups, where * $-P < 0.05$;
 **- $P < 0.01$;



Table 3
Clinical characteristics of dyspeptic syndrome in children from children with chronic gastroduodenitis depending on the association of Helicobacter pylori

Symptoms	Children Hp n=76		Children without HP n=30	
	n	%	n	%
Bitterness in the mouth	16	21,1	8	26,7
-Vomit:	17	22,4	2	6,7*
- The nature of the vomit: with food	9	11,8	1	3,3
With bile	7	9,2	1	3,3
-Vomiting does not bring relief	5	6,6	1	3,3
- Disturbance of appetite	51	67,1	11	36,7*
-Nausea	27	35,5	9	30
- Feeling of heaviness in the right hypochondrium	32	42,1%	3	10*
-Flatulence	30	39,5	11	36,6
-Heartburn	19	25	5	16,7*
-Burp	59	77,6	13	43,3*
- Violation of the nature of the stool: constipation	35	46,1	13	43,3
-unstable	12	15,7	5	16,6
Bladder symptoms				
Murphy-	9	11,8	1	3,3
-Kera-	7	9,2	2	6,7
-Lepene-	2	2,6	-	-
-Ortner-		-	-	-

Note: * significance value between compared groups, where * - $P < 0.05$

The formation of the microbial landscape is also adversely affected by premature births, which in the group of children of the first group occurred 2.1 times more often than in the comparison group (9.4%). In this case, apparently, the causes of development could be transient enzyme deficiency, characteristic of prematurely born children, and antibiotic therapy, which is often noted in the anamnesis of premature babies. As expected, in the comparison groups there were features of hereditary burden.

Hereditry for allergic diseases and diseases of the gastrointestinal tract was burdened, including in group I in 35.3% and 31.8%, in group II - in 6.6% and 5.2% ($P < 0.05$), however, the total burden (for one or more diseases) was significantly higher in children of the first group compared with the second group, which is 3 times more often than in the second group. We noted the same trend in relation to food and drug intolerance, which occurred in the anamnesis of three quarters of children from the main group (74.3%), in a third of children from the second group (31.7%).



Table 4
Peculiarities of nutrition in children of patients depending on the association of Helicobacter pylori in the first year of life

Peculiarities feeding	1 group (n=76)		2 group (n=30)		P
	abs.	%	abs.	%	
Exclusive breastfeeding up to 6 months	8	10,5	18	60,0	<0,05
Feeding with adapted mixtures from birth	25	32,8	2	6,6	<0,05
Feeding with unadapted mixtures from 3 months.	18	36,8	3	10,0	>0,05
Violations of the timing of the introduction and types of complementary foods	49	64,4	10	33,3	>0,05

Note: P-significance of differences between the compared groups

*Note: * significance value between compared groups, where * -P<0.05*

Table 4. presents the results of the analysis of nutritional characteristics in the first year of life in children with chronic gastroduodenitis, depending on the association of Helicobacter pylori. Nutrition is very important for the health, growth and development of a child at any age. An important aspect in the development of the child is the nature of feeding. It is well known that natural feeding not only has a positive effect on the physical, neuropsychic development of the child, but, as studies show, reduces the risk of diseases in adulthood.

We assessed the long-term effect of breastfeeding patterns on the development of Helicobacter pylori. in children. For this, the duration of breastfeeding, the timing of introduction, types of complementary foods, feeding with unadapted mixtures and cow's milk were analyzed.

It turned out that the absence of breastfeeding or its short duration were more common among children with Helicobacter pylori. (P<0.05). It was found that in the group of children with Helicobacter pylori, violations of the regimen, the timing of the introduction of complementary foods were observed more often than in the control group.

Exclusive breastfeeding up to 6 months in history was detected in 17.7% of the first group and 60.0% of children in the control group. Feeding defects in the form of early and inconsistent introduction of complementary foods, the use of food products that do not meet the physiological needs of the child's body were found in children with identified Helicobacter pylori, which is almost 2 times more often than in the control group (P<0.05).

The same high percentage (33.3%) was made up of children from the main group who were

artificially fed with non-adapted milk formulas and undiluted cow's milk, while only 2 children were fed with adapted formulas. In 40% of children, feeding with non-adapted mixtures from 3 months was observed in the main group of children (P <0.05).

A typical mistake was the early (at 3-4 months) introduction of cereal complementary foods, the excess of food that did not meet the needs of the baby, the abuse of carbohydrate foods (juices, cookies, bread, potatoes) in the 2nd half of life.

Hereditary burden for anemia was found more often also in the first observation group.

According to our data, in the general blood test in children with CHD with Helicobacter pylori, there is a significant increase in the number of eosinophils, as well as a decrease in hemoglobin levels. Individual analysis showed that in the group of children of the first group, eosinophilia occurred in every third child.

In this regard, we conducted a study on parasitosis (giardiasis and helminthic invasions coprologically and by determining the level of ELISA in the blood serum and Ig E). It was found that parasitosis aggravated the course with helicobacteriosis c in more than a third of cases - 31 children (40.7%), which is 2.2 times higher than in the second group, where such children were 15.9%. In the structure of parasitosis, according to our data, giardiasis and enterobiasis predominated, which accounted for up to 90% of all detected cases of invasions.

Pronounced endoscopic changes were noted in the vast majority of patients in the first group. The inflammatory process was diagnosed in 70 (92.1%). In 6 children of the second group, EGDS showed no pathological changes.



The leading form of lesions in the first group of patients with OS were superficial lesions, when the only endoscopic criterion for inflammation was hyperemia, focal or diffuse (erythema), while the conclusions included the diagnosis of "superficial gastritis". In 31.8%, along with hyperemia, there was edema of the gastric mucosa, which was accompanied by edema of the gastric mucosa, which was regarded as a sign of severe gastritis, 7 had erosions and/or hemorrhages. Hyperemia of the lower third of the esophagus, which we regarded as a sign of reflux esophagitis, was present in every fifth examined (20.7%). The most common variant of movement disorders detected during endoscopy was duodenogastric reflux (DGR) - 38.7% of children, 15 patients (10.4%) had gastroesophageal reflux (GER). Movement disorders were found in 32.4% in group I and in 13.1% in group II. As a result of the endoscopic

examination of the upper parts of the digestive tract, it was found that for a group of children with *Helicobacter pylori* gastritis, the characteristic changes in the mucous membrane of the gastroduodenal zone are changes in the type of gastroduodenitis. At the same time, in patients with non-*Helicobacter pylori* gastritis, changes are characteristic, both in the type of isolated gastritis, observed in 30% of children, and gastroduodenitis, characteristic of 70% of patients. This is consistent with clinical data on the prevalence of "late" and "night" pain in patients of the first group. Concomitant lesions of the esophagus are detected with a high frequency - more than half of the patients in each group. At the same time, erosive esophagitis is almost twice as common in the group of patients with non-*Helicobacter pylori* gastritis. This also to some extent correlates with clinical data on the prevalence of dyspeptic complaints in patients of this group.

Table 5
Coprological parameters of patients depending on the association of *Helicobacter pylori* in %

Sign	HGD with Hp n=76		HGD without Hp n=30	
Feces for occult bleeding	11	14,4	1	1,3*
Creatorrhea	19	25,0	2	2,6*
Amilorrhoea	53	69,7	5	6,5*
Steatorrhea	34	44,7	5	6,5*

Note: * significance value between compared groups, where * - $P < 0.05$

All children of the main and control groups underwent an analysis of scatology. A distinctive moment in the group of patients of the first group was the prevalence of the number of children with amyloirrhoea 53 (69.7%) versus the second group of patients in 5 (16.7%), respectively. Steatorrhea of the first type with the appearance of neutral fat in the feces, which indicated pancreatic insufficiency, was detected in the first group in 34 (44.7%) patients, and in the control 5 (16.7%), respectively.

Bile acids and soaps in faeces, i.e. steatorrhea of the second type, which indicated an insufficient flow of bile into the small intestine, i.e. on bile stasis, we found in 34 (44.7%) and 31 (40.8%), against the indicators of the control group 5 (16.7%) and 4 (13.3%), respectively.

CONCLUSIONS. Thus, with *Helicobacter pylori* associated gastroduodenal pathology in children, most children have more pronounced clinical symptoms. The increase in the degree of *Helicobacter pylori* - infection is accompanied by a longer abdominal symptoms. Heredity for allergic diseases and anemia was

aggravated more often in the first group of patients, which may have taken place in the formation of extragastric manifestations of *Helicobacter pylori* associated gastroduodenal pathology in children.

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