

Clinical and anamnestic characteristics of children with chronic gastroduodenal pathology

*Uralov Shukhrat*¹, *E. E. Kobilov*², *H. F. Batirov*², *M. K. Tukhtaev*², and *V. B. Agzamov*²

¹Samarkand State Medical University, Samarkand, Uzbekistan

²Samarkand State University named after Sh.Rashidova, Samarkand, Uzbekistan

Abstract. The purpose of this study was to study the clinical and anamnestic characteristics of children suffering from gastroduodenal pathology for a long time, for which 116 children aged 7 to 14 years who were on inpatient treatment in the children's department of the clinical Hospital No. 2 of the Samarkand Medical University were examined during the last 10 years. 34 patients with chronic gastritis were examined, 63 with chronic gastroduodenitis and 19 with duodenal ulcer. In the work, special attention was paid to the age-sex composition, seasonality of the disease, genealogical analysis of pedigrees, clinical manifestations of diseases (pain syndrome, dyspeptic disorders and symptoms of general intoxication), as well as to the results of laboratory and instrumental research methods that can serve for differential diagnosis of chronic diseases of the gastroduodenal zone in children.

1 Introduction

Chronic diseases of the digestive system are among the most common diseases in pediatric practice. Currently, their prevalence is more than 100 per 1000 children [1, 3, 8, 16, 20]. Over the past two decades, the prevalence of chronic gastroduodenal pathology in children has increased by 30%. A high incidence rate in children is observed at the ages of 6-7 and 10-12 years, i.e., during periods of the most intense morpho-functional changes in the child's body, when there are growth imbalances and organ dysfunction, due to uneven growth and maturation of individual organs and systems [4, 6, 7, 9, 14, 24].

Over the past 10 years, the role of the neuropsychiatric factor in the development of gastroduodenal pathology in children has significantly increased [2, 5, 11, 21, 22]. The main causes of chronic diseases of the gastroduodenal zone in children have long been considered several factors - alimentary, neuropsychiatric, genetic, weakening of immune protection, food allergies and impaired gastrointestinal motility [1,]. To date, great scientific and practical interest is paid to the role of *Helicobacter pylori* as one of the leading causes in the development and course of chronic gastroduodenal pathology in children [12, 13, 15, 17, 23].

Pain syndrome and dyspeptic disorders prevail in the clinic. Clinical manifestations of the disease depend on the nosological form of the disease: chronic gastritis is characterized by a decrease in appetite, an unpleasant taste in the mouth, belching, heaviness in the abdomen and rumbling after eating, bloating, flatulence; clinical manifestations of chronic gastroduodenitis and duodenal ulcer are diverse and depend on the degree of structural

changes in the mucosa, their localization, the stage of the pathological process, the functional state of the stomach and metabolic disorders in the body [1, 2, 7, 10, 14, 16]. For chronic inflammatory diseases of the gastroduodenal zone, the characteristic common signs of the disease are symptoms of general intoxication: weakness, lethargy, disturbed sleep, often headaches, pallor of the skin, decreased muscle tone, manifestations of vitamin deficiency [5, 6, 9, 11]. Disorders of the digestive processes lead to weight loss, pronounced weakness, drowsiness and irritability [2, 18, 19]. It is also characteristic that chronic gastroduodenal pathology proceeds with periodic exacerbations and remissions, and exacerbations are seasonal and can be provoked by a violation of the diet [9, 10, 14]. In connection with the above, we set a goal to study the anamnestic data, as well as the main symptoms and syndromes of organ and system damage in chronic diseases of the gastrointestinal tract in children.

2 Research Methodology

In order to achieve this goal, 116 children with chronic gastroduodenal pathology (GDP) aged 7 to 14 years, who were on inpatient treatment in the children's department of the clinical Hospital N 2 of the Samarkand Medical Institute, were examined in dynamics over the past 10 years. Of the 116 examined patients, there were 77 girls (66.4%), 39 boys (33.6%), 29 children aged 7-11 years, 87 12-14 years.

Chronic gastritis (HG) was diagnosed in 34 (29.3%) patients, chronic gastroduodenitis (HCG) - in 63 (54.3%) and duodenal ulcer (DU) - in 19 (16.4%).

3 Results and Discussions

We studied the age-sex composition of sick children, where it was revealed that the number of girls almost doubled (1.97 times) prevails over boys. In the age aspect, out of the total number of patients, the majority (70.0%) were aged 12 to 14 years (Table.1). There is an increase in morbidity with an increase in the age of children, which is especially noticeable in relation to HCG.

Table 1. Distribution of examined patients by nosology, gender and age.

Groups of surveyed	Total		Paul				Age			
			boys		girls		7-11		12-14	
	n	%	n	%	n	%	n	%		
HG	34	29,3	12	35,3	22	64,7	11	32,3	23	67,7
HCG	63	54,3	21	33,3	42	66,7	19	30,1	44	69,9
DU	19	16,4	6	31,6	13	68,4	6	31,6	13	68,4
Total	116	100	39	33,6	77	66,4	36	31,0	80	69,0

Data on the seasons of the year and the prescription of the disease are presented in Table 2. 40 children were examined in winter, 26 in spring, 17 in summer and 33 in autumn. The prescription of the disease in children with GDP in most cases (89%) ranged from one month to three years, of which in more than half of cases (54.0%) did not exceed 1 year, and in 8.6% of children, more than three years. All children were admitted to the hospital during the period of exacerbation of the disease, and 16 (13.8%) of them for examination and clarification of the diagnosis.

Table 2. Distribution of the examined patients according to the season of the year and the prescription of the disease

Distribution of patients by:		Examined patients							
		HG (n=34)		HCG (n=63)		DU (n=19)		Total (n=116)	
		n	%	n	%	n	%	n	%
Season of the year	Winter	12	35,3	20	31,7	8	42,1	40	34,5
	Spring	7	20,6	14	22,2	5	26,3	26	22,4
	Summer	6	17,6	11	17,4	-	-	17	14,6
	Autumn	9	26,5	18	28,7	6	31,6	33	28,5
Prescription of the disease	Up to 1 year	19	55,9	30	47,6	5	26,3	54	46,6
	1-3 years	13	38,2	28	44,4	11	57,9	52	44,8
	More than 3 years	2	5,9	5	8,0	3	15,8	10	8,6

Out of 116 patients, 69 (59.5%) children were previously on outpatient and inpatient treatment for diseases of the gastroduodenal zone, 5 (4.3%) children were admitted to hospitals of another profile (surgical, helminthological, infectious) for examination. For the first time, 47 (40.5%) children applied for diseases of the gastroduodenal zone. In the referral form, the diagnoses most often appeared: acute and HG, HCG, DU and for examination. In 34 (29.3%) sick children, there was a discrepancy between the directional and clinical diagnoses.

Dental caries (22.2%), chronic tonsillitis (24.8%), adenopharyngosinusitis (6.0%), acute inflammatory respiratory diseases (5.4%), anemia (5.2%), polyhypovitaminosis (5.2%), pyelonephritis (4.6%), gallbladder dyskinesia (1.7%) were noted as concomitant diagnoses.

In 104 children, we conducted a genealogical examination for 3-4 generations along the ascending and lateral lines from the proband (Table 3). The burden of the family history of GDP was 65.3%. The most common indication of hereditary burden was in children with HCG (68.7%), compared with patients with IBD (66.6%) and HCG (62.9%), and the I degree of kinship prevails over the II degree, almost 2.37 times.

Table 3. Genealogical analysis of pedigrees of sick children.

№	Analysis of relatives of children with GDP	N	%
1.	Studied pedigrees	104	100
2.	Hereditary burden of gastroduodenal pathology	68	65,3
	Number of sick relatives	95	100
	- including, on the mother's side	16	16,8
	on my father 's side	25	26,3
3.	Mother	20	21,1
	Father	15	15,8
	Brother	8	8,4
	Sister	11	11,6
4.	Male persons	38	40,0
	Female persons	57	60,0
	M: W	1 : 1,5	
5.	I degree (father, mother, brothers, sisters)	26	29,9
	II degree (grandmother, grandfather, uncles, aunts)	11	12,6
	III degree (great-grandfather, great-grandmother, cousins, brothers)	2	2,3
	I+II degree	15	17,2
	I+III degree	1	1,1
	II+III degree	1	1,1

6.	I generation	12	13,8
	II generation	26	29,9
	III generation	6	6,9
	I + II generation	2	2,3
	II + III generation	5	5,7
	I + II + III generation	5	5,7

The total number of sick relatives, including Proband, was 151 for 56 families. Of these 151 patients, female persons turned out to be 1.5 times more than male persons, and in case of DU, this ratio was 2.5: 1.

As is known, the clinical characteristics of patients with GDP are diverse. However, the most characteristic complaints of children with chronic diseases of the stomach and duodenum, upon admission to the hospital, were abdominal pain. The vast majority of patients with HG (29 children, 85.3%) noted pain in the epigastric region, less often pain was in the epigastric and right subcostal regions (2 children), in the epigastric and paraumbilical zone in 1 and in the remaining 2 children - in other combinations.

The characteristics of the pain syndrome, depending on the nosological form of the disease, are presented in table 4, from which it can be seen that the pain was more often of a combined nature. The combined nature of pain was found in HCG 2 times more often than in HCG and more than 2.5 times than in DU. If 12 patients out of 19 with DU and 31 out of 63 children with HCG had complaints of the combined nature of pain, then children suffering from HG were dominated by dull, aching.

Table 4. Pain syndrome in the observed patients

№	Clinical symptom	HG (n=34)		HCG (n=63)		DU (n=19)		Total (n=116)		
		n	%	n	%	n	%	n	%	
I. Localization of pain										
1	Epigastric region	29	85,3	-	-	-	-	29	25,0	
2	Piloroduodenal area	-	-	9	14,3	4	21,0	13	11,2	
3	Epigastrium and right hypochondrium	2	5,9	7	11,1	2	10,5	11	9,5	
4	Epigastrium and the umbilical region	1	2,9	39	61,9	12	63,3	52	44,8	
5	Other combinations	2	5,9	8	12,7	1	5,2	11	9,5	
II. The nature of the pain										
6	Stabbing	-	-	12	19,0	2	10,5	14	12,1	
7	Cramping	-	-	7	11,1	-	-	7	6,0	
8	Dull, aching	18	52,9	3	4,7	-	-	21	18,1	
9	Spilled	1	3,0	6	9,5	3	15,7	10	8,6	
10	Combined character	15	44,1	31	49,2	12	63,3	58	50,0	
11	Compressive	-	-	4	6,3	2	10,5	6	5,2	
III. Duration of pain										
12	Short-term (up to 30 minutes)	32	94,1	35	55,5	5	26,3	72	62,0	
13	Long (30 min – 2 hours)	2	5,9	24	38,2	8	42,	34	29,	

							2		4
14	Permanent (more than 2 hours)	-	-	4	6,3	6	31,5	10	8,6
15	Related to eating	20	53,8	42	66,7	10	57,7	72	62,1
16	Not related to eating	6	17,6	9	14,3	7	36,8	22	19,0
17	For no reason	8	23,6	12	19,0	2	10,5	22	19,0
IV. Time of pain occurrence									
18	Before eating	10	29,4	6	9,5	4	21,0	20	17,2
19	During or after a meal	8	23,6	34	53,9	6	31,5	48	41,3
20	- including, after rough food	7	20,5	20	31,7	4	21,0	31	26,7
21	Before and after meals	16	47,0	8	12,7	9	47,3	33	28,4
22	Night	-	-	6	9,5	14	73,7	20	17,2
23	Hungry	19	55,8	44	69,8	19	100	82	70,6
24	Moyningan 's rhythm of pain	6	17,6	17	27,0	10	52,7	33	28,4

Of the 116 patients, 72 (62.0%) had short-term pain syndrome, 34 (29.4%) had longer-lasting (from 30 minutes to 2 hours) and 10 (8.6%) had constant pain, and their pain intensity was different. Thus, pain syndrome of intense, non-intense and moderate intensity occurred, respectively, in 26 (22,4%), 39 (33,6%) and 51 (44.0%) patients, i.e., moderate intensity pain was 2 times more common than intense pain and 1.35 times more common than non-intense.

In children with HG, the pains were mostly short-term (94.1%) and non-intense (70.6%), whereas with HCG more often (57.2%) they had an average intensity, although in half of the cases their duration was short-term. In contrast, in the case of DU, the pain syndrome in every second child was intense and prolonged.

An analysis of anamnestic data presented in the same table showed that the majority of 72 (62.0%) sick children associate the appearance of pain with eating. In particular, 41.3% of children had pain syndrome during or after meals, including 31 (26.7%) pain increased after eating coarse, fatty (after pilaf) food, which was 1.5 times more common in HCG. Of 116 children with GDP, the appearance and intensification of abdominal pain before meals occurred 2.4 times less often than after meals (17.2%, versus 41.3%). The rest of the patients had pain both before meals and after meals.

14 out of 19 children with DU complained of night pains. Hunger pains were noted in the anamnesis in 82 (70.6%) patients, including all children suffering from DU and in more than half of patients with HG (55.8%) and HCG (69.8%). Moyningan rhythm of pain (hunger-pain-eating-relief-hunger-pain...) It was detected in 33 (28.4%) patients, while being detected in half of cases among children with DU, its frequency in this disease exceeded that in HCG and almost 3 times (2.99 times) than in HG.

In most of the patients we observed, pain syndrome was combined with dyspeptic disorders, the frequency of which, depending on the nosology, is shown in Table 5. The table clearly shows that 86 (74.1%) patients had a decrease in appetite, and nausea, heartburn, belching occurred with almost the same frequency in every second child. Vomiting was observed somewhat less frequently (43.1%). 75 children (64.6%) had

irregular stools, 56 of them (48.2%) complained of constipation, 11 (9.4%) patients had a change of constipation with a stool disorder and 8 (6.8%) had unstable stools. Irregular stools, including a tendency to constipation, were found with the greatest frequency in DU than in HG and HCG. 29 patients complained of bad breath and 48 children complained of bitterness in the mouth, of which 29 (60.4%) were with HCG.

Table 5. The frequency of dyspeptic disorders and symptoms of general intoxication, depending on the nosology of DU

Clinical symptom:		HG (n=34)		HCG (n=63)		DU (n=19)		Total (n=116)	
		n	%	n	%	n	%	n	%
I. Dyspeptic disorders:									
1.	Decreased appetite	21	61,7	51	81,0	14	73,7	8	74,1
2.	Nausea	18	53,0	39	61,9	12	63,1	6	59,4
3.	Vomiting	16	47,6	23	36,5	11	58,0	5	43,1
4.	Heartburn	12	35,3	46	73,0	8	42,1	6	56,9
5.	Belching	16	47,6	34	54,0	12	63,1	6	53,4
6.	Irregular stools	15	44,1	43	68,2	17	89,1	7	64,4
7.	incl., - constipation	13	38,3	29	46,0	14	73,7	5	48,2
8.	- unstable chair	1	2,9	6	9,5	1	5,2	8	6,8
9.	- change of constipation with diarrhea	1	2,9	8	12,7	2	10,2	1	9,4
II. Symptoms of general intoxication:									
10.	Headache and dizziness	11	32,3	36	57,1	9	47,3	5	48,2
11.	General weakness and fatigue	19	56,0	38	60,3	14	73,7	7	61,2
12.	Irritability	3	8,7	12	19,4	7	36,8	2	18,9
13.	Rapid excitability	2	5,8	3	4,7	2	10,2	7	6,0
14.	Sweating	1	2,9	4	6,3	4	22,2	9	7,7
15.	Restless sleep	2	5,8	4	6,3	3	15,8	9	7,7

An analysis of anamnestic data showed that in 54 (46.5%) children, the pain syndrome intensified after physical, mental stress, after excitement, in the remaining 62 (53.5%) children, with the combined effect of these factors.

In patients with GDP, symptoms of general intoxication often accompanied the disease. Thus, general weakness, fatigue, malaise were found in 71 (61.2%) children, headache, dizziness - in 56 (48.2%), irritability - in 22 (18.9%), restless sleep and sweating in 18 (15.5%), rapid excitability in 7 (6.0%) children.

Among the examined patients, the overwhelming majority – 79 (68.1%) had not previously observed the correct diet. Of these, 52 (44.8%) children ate irregularly, ate more food late in the evening, which is due to national traditions, and this fact was revealed in every second patient with DU and HCG and almost every third - HG.

In addition, it was found out from the anamnesis that 27 (23.2%) patients had regular dry eating and fast, hasty eating. Abuse of rather hot food was noted in 7 children suffering from HCG and in 6 - cold food.

Daily consumption of a large amount of fast food, snacks (chips, crackers), carbonated drinks was revealed in the anamnesis of almost half (48.3%) of patients. Analysis of anamnestic data showed that 1/3 of the children's daily diet was dominated by such dishes and foods as pilaf, roast, hamburgers, grilled chickens, sausages, canned foods, etc., which, being fatty, smoked, coarse, difficult to digest, often contributed to the appearance of heaviness and a sense of discomfort: 35 (30.1%) - baked goods and sweets, every seventh child has flour products.

40.8% of patients liked and quite often consumed salty, and almost every fifth child liked spicy and bitter. In almost 1/3 (32.5%) of patients, the exacerbation of chronic GDP was seasonal.

An objective study of 116 children with GDP, in every second patient (51.7%) revealed a reduced diet, in 44.9% - satisfactory and in 4 (3.4%) children it was elevated. The general condition of the majority of patients (89.3%) was assessed as moderate, and the rest - as severe.

On examination, attention was drawn to the pallor (46.5%) and dryness (31.0%) of the skin, sometimes blue under the eyes. In a significant majority (93.1%) of patients, the tongue was overlaid with a white or yellowish coating, in 7 (6.0%) patients atrophy of the papillae of the tongue was noted. Palpation of the abdomen revealed an increase in the liver from 1.0 to 2.5 cm in 16 (13.7%) patients. Rumbling was noted in 8 children with HCG and PBDC, while palpation of the abdomen was noted, in 5 - moderate tension of the abdominal muscles. The study of the neuropsychic sphere revealed emotional lability in most patients. 7 (6.0%) children were withdrawn, difficult to make contact.

No abnormalities were detected on the part of the respiratory organs. In the study of the cardiovascular system, the vast majority of patients (76.7%) revealed muffled heart tones and often (7.7%) listened to systolic murmur at the apex of the heart.

All the examined patients underwent conventional laboratory tests of blood, urine, feces, both upon admission to the hospital and in the dynamics of the disease. Analysis of hemograms showed that 1/4 of the patients had an acceleration of ESR, 13 children had moderate eosinophilia and 27 had a significant decrease in the number of erythrocytes and hemoglobin. On the part of the genitourinary system, the phenomenon of pyeloectasia, moderate leukocyturia and cylindruria was detected in 3 patients. During a coprological study, neutral fat was determined in the bowel movements of 18 patients, fatty acids - in 8 children, muscle fibers - in 29, digestible - in 28 children and indigestible - in 60 children, vegetable fiber, from small amounts to significant, in most patients small detritus was detected, in 14 children - iodophilic flora, 27 patients have starch. Grigersen's reaction was positive in 18 cases.

In this connection, for the purpose of differential diagnosis of nosological forms of GDP in children, additional laboratory and instrumental methods were carried out: secretory and acid-forming functions of the stomach were studied in 106 (91.3%) sick children. X-ray examination was performed in 108 (93.1%), endoscopy was performed in 85 (73.2%), the presence of *Helicobacter pylori* was studied in 66 (56.9%) sick children.

The study of gastric juice by fractional method showed that out of 106 patients with chronic GDP, 73 (68.8%) patients have a hyperacid state, 23 (21.7%) have a normocid state and 10 (9.5%) patients have a hypoacid state of gastric juice. The level of hydrochloric acid production in patients with HDP in the basal and stimulated phases of secretion is 3.3 and 9.3 times higher, respectively, than in the lean portion.

Radiological data in 23 cases out of 108 (21.2%) gave a discrepancy with the clinical diagnosis, which is associated with the identity of radiological signs of diseases of the gastroduodenal system.

The endoscopic picture in HCG and HG was characterized by superficial, hypertrophic and erosive changes in the mucous membranes of the gastroduodenal zone. Edema, hyperemia, and a defect of the mucous membranes ranging in size from 0.3 to 0.8 cm were found in DU. 1/3 of the examined patients had an increased tone of the upper gastrointestinal tract in the form of convoluted, poorly straightening folds and pyloric spasm.

A study of the presence of antibodies of class Ig G to *Helicobacter pylori* in 66 patients with GDP revealed a significant increase in the titer of antibodies of class Ig G to *Helicobacter pylori*, which increased with increasing age of children. Thus, in children aged 7-11 years, *Helicobacter pylori* infection was confirmed in 8 children (12.1%), in the group of 12-14 years – in 25 children (37.8%).

4 Conclusions

Having studied the anamnestic data, as well as the main symptoms and syndromes of organ and system damage in chronic gastritis, gastroduodenitis and peptic ulcer in children, we found that among patients with chronic gastroduodenal pathology, the number of girls almost twice prevails over boys. In the age aspect, out of the total number of examined, the majority (70.0%) of sick children were aged 12-14 years. And we also noted that with an increase in the age of children, there is an increase in the incidence of pathology of the gastroduodenal zone, which is especially pronounced in patients with chronic gastroduodenitis. Studying the genealogical analysis of the pedigrees of sick children, we found that the total number of sick relatives was 151 per 56 families, and among these patients, female persons turned out to be 1.5 times more than male persons, and with peptic ulcer disease this ratio was 2.5/1. We found that the burden of family history of chronic gastroduodenal pathology is 65.3%, and most often, an indication of hereditary burden was noted in patients with chronic gastritis (68.7%), compared with patients with peptic ulcer and chronic gastroduodenitis. It is also worth noting that among the surveyed, the I-degree of kinship prevails over the II-degree by almost 2.4 times. Errors in nutrition were revealed in the majority of the surveyed. Regular consumption of a large amount of fast food, chips, crackers, carbonated drinks in the anamnesis was noted in almost half of the patients. Analysis of anamnestic data also showed that the daily diet of 33% of patients was dominated by flour, fatty, smoked, coarse, canned, indigestible dishes and foods that contributed to the appearance of dyspeptic phenomena and pain syndrome.

Although the clinical symptoms of patients with GDP are diverse, it is worth noting that the pain syndrome comes to the fore, the characteristics of which differ depending on the nosological form of the disease and can serve as an important differential diagnostic sign. Thus, the combined nature of pain was observed with HCG 2 times more often than with HG and more than 2.5 times than with DU. Along with pain syndrome, various dyspeptic disorders and symptoms of general intoxication observed in the absolute majority also contribute to the differential diagnosis of nosological forms of gastroduodenal diseases in children.

Laboratory tests also contributed to the detection of various changes in the condition of patients. Thus, the analysis of hemograms showed that 1/4 of the patients had an acceleration of ESR, a significant decrease in the number of red blood cells and hemoglobin. In a coprological study, neutral fat (18 patients), muscle fibers (29 patients), digestible (28 patients) and indigestible (60 patients) vegetable fiber, most patients found

fine detritus, as well as iodophilic flora and starch. Grigersen's reaction was positive in 18 patients.

Laboratory and instrumental methods (secretory and acid-forming functions of the stomach in 91.3% of patients, X-ray diagnostics in 93.1%, DU in 73.2%, the study of the presence of *Helicobacter pylori* in 56.9% of patients) also revealed additional differential diagnostic criteria for nosological forms of gastroduodenal diseases in the examined children. Thus, when analyzing laboratory data on the study of the presence of *Helicobacter pylori*, we revealed a statistically significant increase in the titer of specific antibodies with increasing age of children. It should be noted that the low level of antibodies in young children is explained by the low sensitivity of their detection and the weakness of the immune response in children under the age of 6-8 years.

References

1. T. G. Avdeeva, Yu. V. Ryabukhin, L. P. Parmenova, *Pediatric gastroenterology* (2011)
2. V. P. Akimova, G. V. Kokurkin, Neurovegetative disorders in children with chronic gastroduodenitis. *Bulletin of the Chuvash University*, 316-317 (2009).
3. V. O. Bykov, E. V. Vodovozova, S. A. Dushko and others, *Pathology of older children, Part 2* (2011)
4. L. M. Garifullina, M. R. Rustamov, Sh. M. Uralov, Obesity in children: risk factors for development in accordance with perinatal programming of metabolism. *Pediatrics*, 171-176. (2019)
5. M. M. Gurova, Yu. P. Uspensky, Features of vegetative regulation in adolescent children with chronic gastroduodenitis, depending on the stage of the disease. *Kuban Scientific Medical Bulletin*, 122 (2010)
6. M. M. Gurova, V. V. Tsirkunova, Concomitant diseases of the digestive system in adolescent children with chronic gastroduodenitis. *Bulletin of Novgorod State University*, 37-43 (2014)
7. A. M. Zaprudnov, K. I. Grigoriev, V. A. Filin, A. B. Safonov, Achievements of domestic gastroenterology: origins, current state, prospects. *Pediatrics*, **87(6)**, 8-13. (2008)
8. S. D. Ihsanov, D. F. Sergienko, Peptic ulcer disease in children: a modern view of the problem. *Modern problems of science and education*, 2 (2017)
9. R. R. Kildiyarova, Yu. F. Lobanov, *Visual pediatric gastroenterology and hepatology* (2013)
10. A. V. Kotovsky, E. A. Sirotkin, Prediction of the course of duodenal ulcer and chronic gastroduodenitis in children. *Saratov Journal of Medical Science*, **3(21)**, 84-87. (2008)
11. M. Ya. Ledyayev, O. V. Stepanova, N. V. Shakhova. Syndrome of autonomic dysfunctions in children: myths and reality. *Attending physician*, **1**, 27-29 (2009)
12. V. G. Sapozhnikov, *Helicobacter* associated gastroduodenitis in children. *Medical newspaper*, **42**, 9. (2014)
13. I. Sichinava, I. Gorelov, A. Shershevskaya, Pathomorphosis of chronic gastroduodenitis in children for 6 years after antihelicobacter treatment. *Doctor*, **8**, 11-14 (2011)
14. Sh. M. Uralov, M. R. Rustamov, F. V. Makhmudova, M. S. Ataeva, Clinical and biochemical assessment of nitrogen metabolism in children with chronic

- gastroduodenitis and duodenal ulcer, depending on the duration of the disease. *Vyatka Medical Bulletin*, **2**, 62-63 (2006)
15. Yu. P. Uspensky, N. V. Baryshnikova, *Helicobacter pylori - associated diseases: pathogenesis, diagnostic features and differentiated treatment* (2010)
 16. N. P. Shabalov, *Pediatric gastroenterology* (2011)
 17. P. L. Shcherbakov, *Diseases of the digestive organs in children with helicobacteriosis* (2011)
 18. Z. S. Abdukuhidovich, Y. N. Anvarovna, S. A. Rustamova, U. S. Mukhtarovich, I. S. Buribaevna, Some clinical features of the chickenpox in adults and children in modern conditions (review article). *European Journal of Molecular and Clinical Medicine*, **7(3)**, 2716-2721 (2020)
 19. S. M. Ibatova, F. Kh. Mamatkulova, N. B. Abdukadirova, Y. A. Rakhmonov, M. M. Kodirova, Risk factors for development of broncho-obstructive syndrome in children, *International Journal of Current Research and Review*, **12(23)**, 3-6. (2020)
 20. F. Sh. Mavlyanov, M. Kh. Mukhammadiev, S. Zh. Kamolov, F. M. Shukurov, Sh. Kh. Mavlyanov, Monitoring of organ failure development in patients with acute pancreatitis, *European Journal of Molecular and Clinical Medicine*, **7(3)**, 2523-2528 (2020)
 21. Z. F. Mavlyanova, Sh. Khusinova, Sh. Sabirova, S. Umirova, Y. Kamalova. Correlation of neurological and nutritive status in children with cerebral paralysis, *European Journal of Molecular and Clinical Medicine*, **7(2)**, 1615-1621 (2020)
 22. R. Sharipov, M. M. Akhmedova, A. S. Rasulov, K. R. Dilmuradova, D. T. Rabbimova, Justification of the need for correction of neurological disturbances in treatment of respiratory diseases in children, *European Journal of Molecular and Clinical Medicine*, **7(2)**, 2988-2995 (2020)
 23. F. Soares, A. Rocha, C. Rocha, Differences in peripheral blood lymphocyte phenotypes between *Helicobacter pylori*-positive children and adults with duodenalulcer. *Clin. Microbiol. Infect.*, **13(11)**, 1083-1088 (2007)
 24. S. Ziyadullaev, O. Elmamatov, N. Raximov, F. Raufov, Cytogenetic and immunological alterations of recurrent bladder cancer, *European Journal of Molecular and Clinical Medicine*, **7(2)**, 1877-1883 (2020)