

# Clinical-genetic and Psychoemotional Peculiarities and the Quality of Life of Patients with Long-term Observation of the Dynamics of the Duodenal Ulcer

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**Abstract---** *The rationale for the present study is explained by a high rate of complications in patients with duodenal ulcer and the necessity to search for the markers of the disease development and to study the risk factors. The study is aimed at the evaluation of clinical-genetic and psychoemotional peculiarities and quality of life of patients with duodenal ulcer. The authors examined 231 patients aged  $39.8 \pm 0.8$  years old. The authors evaluated the peculiarities of a social factor with the screening methods, peculiarities of the clinical picture according to the standards, analyzed the polymorphic variants of IL10 (-627C>A; rs1800872) with polymerase chain reaction, assessed the psychoemotional status and quality of life during a long-term observation after the person-oriented educational program for patients with ulcer disease. The authors revealed the peculiarities of the social factor, the changes in the clinical, endoscopic and psychoemotional picture of the disease, identified the markers of the development of duodenal ulcerous disease and registered the improvement of the quality of life. The performance of genetic tests for patients along with clinical and psychoemotional examinations and positive changes in the quality of life contribute to the complex approach to a long-term observation of patients with duodenal ulcer.*

**Keywords---** *Duodenal Ulcer, Risk Factors, Polymorphic Variants of Interleukin Genes, Psychoemotional Status, Quality of Life, Long-term Dynamic Observation.*

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## I. INTRODUCTION

Duodenal ulcer disease is a chronic recurrent disease that is characterized by a hereditary predisposition in combination with behavioral risk factors [1,3,7,20,21,22]. Despite some decrease in the morbidity rate, the increase in the complications rate is observed, like bleedings and ulcer perforation [5,6,9,10,29]. Handling the issues of infection with *Helicobacter pylori* (*H. pylori*) occupies the major part of the studies [8,11,12,13,16,23]. Foreign authors analyzed the polymorphic issues of the interleukin genes [4,15,18,24,25,26]. In the age of person-oriented medicine, it is important to understand the peculiarities of duodenal ulcer development in each patient [14,28].

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Understanding of the development of the disease allows the doctors to provide preventive measures for patients with duodenal ulcer and to limit the impact of the risk factors during a long-term dynamic observation [1,2,3,6,7,29]. The study of the quality of life leads to the integral evaluation of the influence of disease on the physical, psychological, and social functioning of patients with different gastrointestinal diseases and allows the specialists to monitor these factors during the process of dynamic observation [2]. The aim of the study was to evaluate clinical-genetic and psychoemotional peculiarities and the quality of life of patients with duodenal ulcer disease during a long-term dynamic observation in outpatient conditions.

## II. MATERIALS AND METHODS

The authors examined 231 patients aged  $39.8 \pm 0.8$  years old (91.34% of men, 8.66% of women) with duodenal ulcer according to the standards accepted in the Russia Federation (2012) and clinical recommendations [17,19,27]. The patients were divided into two groups by the method of Altshuler modified by Konovalov: patients with a genetic predisposition to ulcerous disease ( $n=102$ ) and patients without a genetic predisposition to ulcerous disease ( $n=129$ ). The group of comparison contained healthy people ( $n=108$ ). The authors evaluated the peculiarities of the social factor (food, alcohol consumption, smoking, level of education, family status, living conditions) by the results of a questionnaire survey; *H. pylori* count – by the results of histological, serological, and fast urease tests; blood group; peculiarities of clinical pictures of the studied patients by collecting complaints and medical records, and physical examination. Psychoemotional status was evaluated by State-Trait Anxiety Inventory (STAI), Beck Depression Inventory (BDI) and Hamilton Rating Scale for Depression (HRDS). The stress impact was evaluated by the method of Holmes and Rahe. The quality of life (QL) in the studied groups was assessed by the form MOS SF-36 for the assessment of the influence of individual-oriented educational program for patients with ulcer disease in 1 and 3 years of the dynamic observation. The group of observation included patients with duodenal ulcer that had an educational person-oriented program for 1 and 3 years. The group of comparison included patients that did not that educational program. The questionnaire contained 36 questions that were grouped in 8 scales. These scales characterize the characteristics of health that include function and dysfunction, stress and well-being, objective and subjective sensations, positive and negative emotions of the general health status.

Physical summed component of health includes physical functioning, physical role functioning, pain, general health. Psychical summed component of health defines a number of parameters: viability, social and role-emotional functioning, mental health. Each scale was used for the analysis of mean values. The results are presented in points (0-100). High scale values corresponded with a higher level of quality of life. The complex of investigations included the isolation of DNA from peripheral leucocytes in all the groups with further analysis of polymorphic variants of the gene *IL10* (-627C>A; rs1800872) by PCR method. The statistical analysis was performed with chi-square test by the contingency table corrected by Yates and with Student's t-test, Mann-Whitney test, and Spearman's correlation coefficient. The study was performed according to the principles of the Declaration of Helsinki and was approved by the local expert committee of the Ufa Medical State University.

### III. RESULTS

Table 1 shows that patients with a hereditary predisposition to duodenal ulcer had duodenal-gastric reflux diagnosed more often,  $p=0.038$ , had rough deformation of the duodenal bulb,  $p=0.0003$ , and had higher pH,  $p=0.00002$ . Both groups had similar content of *H. pylori*,  $p=0.77$ . There was a similar number of smokers in both groups,  $p=0.21$ . Regular diet plan (3-4 and 5 and more times per day) was observed more often in patients from Group II than from Group I,  $p=0.0009$ ;  $p=0.000006$ . Patients had separate accommodation ( $p=0.00003$ ) and patients were married,  $p=0.000001$ . Psychoemotional status was characterized by high state and trait anxiety,  $p=0.0001$ . According to Beck Depression Inventory and Hamilton Rating Scale for Depression, a mild level of depression was observed,  $p<0.05$ . Stress resistance evaluation in the studied groups revealed threshold and high level of resistance, respectively,  $p=0.0001$  (Table 2).

Men were more often occupied at nightshifts (Spearman's coefficient 0.318;  $p=0.024$ ); consumed alcohol (0.326;  $p=0.022$ ); smoked (0.465;  $p=0.008$ ). By the social status, the patients were blue collars (0.333;  $p=0.018$ ) and had secondary and secondary professional education (-0.289;  $p=0.036$ ).

Table 1: Features of Risk Factors, Clinics of Patients with Duodenal Ulcer

Parameters	Hereditary ulcers		Non-hereditary ulcers		Total
	Abs	%	Abs	%	Abs
Number of patients	102	44.16	129	55.84	231
Number of infected patients	93	91.18	115	89.15	208
				$\chi^2=0.08$ ; $p=0.77$	
Feeding rate					
Number of patients	102	44.16	129	55.84	231
2 times per day	19	18.63	30	23.26	49
3-4 times per day	40	39.22	80	62.02**	120
				$\chi^2=11$ ; $p=0.0009$	
5 and more times per day	43	42.16	19	14.73**	62
				$\chi^2=20$ ; $p=0.000006$	
Education					
Secondary education	75	73.53	97	75.19	172
				$\chi^2=0.02$ $p=0.89$	
Secondary professional education	8	7.84	11	8.53	19
				$\chi^2=0.003$ $p=0.96$	
Higher education	26	25.49	27	20.93	53
				$\chi^2=0.44$ $p=0.51$	
Family status					
Married	50	49.02	104	80.62	154
				$\chi^2=24$ ; $p=0.000001$	
Living conditions					
Separate apartment	89	68.99	94	92.16	183
				$\chi^2=17.1$ ; $p=0.00003$	
Smoking	45	44.12	37	28.68	82
				$\chi^2=1.56$ ; $p=0.21$ .	

Alcohol consumption					
Number of patients	102	44.16	129	55.84	231
More than 1 time per week	31	30.39	35	27.13 $\chi^2=0.16$ ; $p=0.69$	66
Less than 1 time per week	6	5.88	7	5.43 $\chi^2=0.02$ ; $p=0.89$	13
Less than 1 time per month	13	12.75	-	- $\chi^2=13$ ; $p=0.0004$	13
No alcohol	43	42.16	51	39.53 $\chi^2=0.33$ ; $p=0.57$	94
Did not respond	9	8.82	36	27.91 $\chi^2=12$ ; $p=0.0005$	45
Administration of NSAID	45	44.12	21	16.28 $\chi^2=20$ ; $p=0.000007$	66
Blood group					
0 (I)	51	50	42	32.56 $\chi^2=6.5$ $p=0.01$	93
A (II)	24	23.53	42	32.56 $\chi^2=1.9$ $p=0.17$	66
B (III)	8	7.84	31	24.03 $\chi^2=9.5$ $p=0.002$	39
AB (IV)	4	3.92	13	10.08 $\chi^2=1.44$ $p=0.23$	17
Do not know their blood group	16	14.71	1	0.77 $\chi^2=16$ $p=0.00005$	17
Gastric content					
Bile	19	18.63	11	8.53 $\chi^2=4.3$ $p=0.038$	30
Duodenal bulb deformation					
Rough deformation	26	25.49	9	6.98 $\chi^2=14$ $p=0.0003$	35
pH	83	81.37	69	53.49 $\chi^2=18$ ; $p=0.00002$	152
Pain syndrome	89	87.25	87	67.44 $\chi^2=11$ ; $p=0.0008$	176
Acute conditions 2-3 times per day	76	74.51	58	44.96 $\chi^2=19$ ; $p=0.00001$	134
Complications in the anamnesis (bleeding, perforation, stenosing)	12	11.76	4	3.1 $\chi^2=5.4$ ; $p=0.02$	16
Mirror duodenal bulb ulcers	18	17.64	14	10.85 $\chi^2=23$ ; $p=0.000002$	32
Mucous hyperplasia	24	23.53	8	6.2 $\chi^2=13$ ; $p=0.0003$	32
Pyloric gap	17	16.67	5	3.88 $\chi^2=9.4$ ; $p=0.002$	22

Note: significant differences at  $p<0.05$

Table 2: Psychological Components of Patients with Duodenal Ulcer

Parameters	Hereditary ulcers (n=102)	Non-hereditary ulcers (n=129)
	M±m	M±m
State anxiety	44.4±0.5	36.7±0.2; p=0.0001
Trait anxiety	50.1±0.2	43.4±0.1 p=0.0001
Beck Depression Inventory	11.5±0.3	9.9±0.2 p<0.05
Hamilton Depression Scale	12.4±0.1	10.9±0.5 p<0.05
Resistance to stress	212.3±0.6	177.1±3.9 p=0.0001

Note: significant differences at p<0.05

The analysis of polymorphic variants of *IL10* in the general sampling and in the ethnically subdivided groups of patients with duodenal ulcer and in the control group showed that there was an even distribution of genotypes *rs1800872\*AC* and *rs1800872\*CC*, the distribution of the genotype *rs1800872\*AA* among the Tatar between the diseased and healthy participants was statistically significant, 1.2% and 11.76%, respectively ( $\chi^2=5.67$ ; p=0.017; OR=0.091); (CI95% (0.011-0.751), as well as the distribution of the allele *rs1800872\*A* – 77.11 and 64.71%, respectively,  $\chi^2=5.05$ ; p=0.025; OR=0.544; (CI95% (0.329-0.902) (Table 3,4).

Table 3: The Distribution of Genotype Frequencies of the Polymorphic Variant

**IL10 (-627C>A, rs1800872) in the samplings of patients with duodenal ulcer**

Genotype, Allele		Patients (in general)	Control (in general)	Russians with duodenal ulcer	Russians (Control)	The Tatars with duodenal ulcer	The Tatars (control)
A/A	Ni	11	15	3	4	1	8
	pi±sp	5.85±1.71	8.43±2.08	11.11±6.05	9.52±4.53	1.2±1.198	11.76±3.91
	CI %	2.96-10.23	4.79-13.52	2.35-29.16	2.66-22.62	0.0305-6.531	5.22-21.87
	$\chi^2$ (P);OR (CI%)	0.57 (0.45); 0.675 (0.301-1.513)		0.04 (0.845); 1.188 (0.244-5.775)		5.67(0.017); 0.091 (0.011-0.751)	

Note: Ni-group size; N-sample size; pi-allele frequency (genotype); sp-PI error, CI % - confidence interval

Table 4: Frequency Distribution of Alleles of Polymorphic Variant

**IL10 (-627C>A, rs1800872) in the samplings of patients with duodenal ulcer**

A	ni	112	108	17	24	38	48
	pi±sp	29.79±2.36	30.34±2.44	31.48±6.32	28.57±4.93	22.89±3.26	35.29±4.1
	CI %	25.21-34.69	24.62-37.71	19.52-45.55	19.24-39.47	16.2-33.41	14.95-53.5
	$\chi^2$ (P);OR (CI%)	0.0066 (0.935); 0.974 (0.71-1.336)		0.03 (0.862); 1.149 (0.546-2.418)		5.05 (0.025); 0.544 (0.329-0.902)	
	N	376	356	54	84	166	136

Note: Ni-group size; N-sample size; pi-allele frequency (genotype); sp-PI error, CI % - confidence interval

The study results showed that the presence of genotype *rs1800872\*AA*, allele *rs1800872\*A* is a marker of the development of duodenal ulcer in the Tatar ethnic group.

The comparison of the quality of life of patients from the observation group (patients with duodenal ulcer) during a dynamic observation revealed a significant improvement of the quality of life in 1 and 3 years according to all the scales of MOS SF-36 (Table 5).

Table 5: Analysis of the Quality of Life of the Studied Patients after 12 months and 3 years of Dynamic Observation

MOS SF-36 Scale	Before the study		p, M.-W. test	In 1 year of the dynamic observation		p, M.-W. test	In 3 years of the dynamic observation		p, M.-W. test
	Observation group n = 231 (Me; Min-Max)	Comparison group n = 37 (Me; Min-Max)		Observation group n = 231 (Me; Min-Max)	Comparison group n = 37 (Me; Min-Max)		Observation group n = 231 (Me; Min-Max)	Comparison group n = 37 (Me; Min-Max)	
PF	43.34±0.09 (43; 40 - 49)	38.5±0.17 (38; 36 - 42)	0.065	77.35±0.11 (77; 74 - 79)	70.54±0.19 (70; 67 - 72)	<0.001	78.77±0.13 (78; 75 - 81)	71.04±0.22 (71; 68 - 73)	<0.001
RPF	38.12±0.09 (37; 35 - 39)	38.08±0.18 (37; 35 - 40)	0.864	68.7±0.12 (68; 65 - 70)	58.29±0.2 (58; 55 - 60)	<0.001	70.15±0.13 (70; 66 - 72)	59.17±0.21 (59; 56 - 61)	<0.001
PS	41.11±0.08 (40; 38 - 42)	41.02±0.18 (40; 37 - 44)	0.269	73.18±0.12 (73; 70 - 76)	62.38±0.2 (62; 59 - 64)	<0.001	74.65±0.12 (74; 70 - 76)	63.28±0.2 (63; 60 - 65)	<0.001
GHS	39±0,09 (38; 36 - 40)	39.12±0.18 (38; 36 - 40)	0.163	67.30±0.12 (67; 63 - 68)	56±0.19 (55; 52 - 57)	<0.001	67.38±0.13 (67; 64 - 70)	55.12±0.2 (56; 53 - 58)	<0.001
V	39.02±0.08 (38; 36 - 40)	39.06±0.16 (38; 36 - 40)	0.638	71.76±0.13 (71; 68 - 74)	59.78±0.18 (59; 56 - 61)	<0.001	72.89±0.14 (72; 69 - 76)	60.19±0.19 (60; 57 - 62)	<0.001
SF	36.14±0.08 (36; 34 - 38)	36±0.19	0.099	81±0.13 (81; 78 - 84)	68.54±0.18 (68; 65 - 70)	<0.001	82.37±0.13 (82; 79 - 85)	69.15±0.19 (69; 66 - 71)	<0.001
REF	37.13±0.08 (37; 35 - 39)	37.54±0.18 (37; 34 - 39)	0.07	76.01±0.08 (76; 72 - 77)	66.52±0.2 (66; 63 - 68)	<0.001	77±0.1 (77; 74 - 79)	67.12±0.2 (67; 64 - 69)	<0.001
MH	32.14±0.08 (32; 30 - 34)	32.45±0.17 (32; 30 - 34)	0.089	73.19±0.13 (73; 69 - 76)	61.04±0.19 (61; 58 - 63)	<0.001	74.17±0.15 (73; 70 - 77)	62.04±0.19 (62; 59 - 64)	<0.001

Note: Me – median; significant differences at p<0.05. PF – physical functioning, RPF – role physical functioning, SF – social functioning, REF – role-emotional functioning, PS – pain syndrome, GHS – general health status, V – viability, REF – role emotional functioning, MH – mental health.

The mean value of the parameter “physical functioning” (PF) in patients from the observation group increased in 12 months by 34.01 points and in 3 years – by 32.54 points, respectively. The improvement of QL by the scale “role physical functioning” by 30.58; 32.03 points in the group of observation and by 20.21; 21.09 points in the group of comparison, respectively, was registered during the period of observation. The parameter “pain syndrome” (PS) improved in the observation group by 32.07, 33.54 and 21.36, and in the group of comparison by 22.26 points, respectively.

A subjective evaluation of “general health status” (GHS) of patients improved in 12 months by 28.3 points, in 3 years – by 28.38 points, in the observation group – by 16.88 points, and in the group of comparison – by 16 points, respectively. The parameter “viability” (V) in the examined patients during a 5-year dynamic observation improved in the group of observation by 32.74 and 33.87 points, and in the group of comparison – by 20.72 and 21.13 points, respectively. “Social functioning” (SF) parameter improved by 44.86, 46.23 points in the observation group, and by 32.54, 33.15 points in the group of comparison, respectively. The quality of life by the scale of role-emotional functioning (REF) improved by 38.87 points in 12 months and by 39.87 points in 3 years; in the observation group – by 28.98 points; in the comparison group – by 29.58 points, respectively. During the observation, the parameter “Mental health” (MH) improved by 41.05; 42.03 points in the observation group, by 28.59; 29.59 points in the group of comparison, respectively.

#### IV. DISCUSSION

The present study attracts the attention of clinicians to the peculiarities of diagnostics, development, treatment, and prevention of duodenal ulcer in patients with a genetic risk factor of the development of the mentioned disease. There were 16.02% of patients with newly diagnosed duodenal ulcer among the studied patients. The average age of 231 patients was  $39.8 \pm 0.8$  years old; the duration of the disease was  $6.07 \pm 0.6$  years. The study included 91.34% of men, 8.66% of women. The performed genealogic analysis by the method of Altshuller allowed the authors to identify 102 patients with a hereditary predisposition to ulcerous disease and 129 patients without it. The revealed hereditary predisposition allows for an early choice of proper tactics of treatment: early diagnostics, start of the dynamic observation, analysis of the risk factors, the performance of laboratory-instrumental examination during a year.

It was established that duodenal ulcer sets on early, primarily in childhood, develops severely, and has a tendency to complications with often recurrences and psycho-emotional disorders. Presently, a lot of attention is paid to the improvement of medical care by a personalized approach. In such conditions, a doctor should rely on the peculiarities of any therapeutic disease considering gender (age) related peculiarities, as well as genetic predisposition. The effectiveness of the diagnostics, treatment, and prevention of ulcerous disease directly correlates with gender peculiarities, medical records keeping, and differentiated correction of the therapy.

It is known that duodenal ulcer is associated with persisting *H. pylori* because the analysis of external significant risk factors among the studied patients showed that *H. pylori* was revealed in 91.18% of patients with a hereditary predisposition and in 89.15% of patients without a hereditary predisposition,  $p=0.77$ . The next studied factor was patients' diet. The role of a diet in the onset and development of the disease is quite important because improper diet, nutrition plan failure, fast food, consumption of food with irritating and succagogue effect enhance the activity acid-peptic factor. Food is a buffer in the normalization of the ratio between gastric mucosa and aggressive gastric juice. The study showed that patients rarely had 3-4 meals a day. In the group of patients with a hereditary predisposition and in the group of patients without a hereditary predisposition, the ratio was 39.22% and 62.02%, respectively,  $p=0.0009$ . More often, patients had 5-6 meals a day during a day (42.16% and 14.73%, respectively,

$p=0.000006$ ). The share of patients who overconsumed fatty meals was 6.68% and 6.98%, respectively,  $p>0.05$ .

The distribution among smokers was the following: Group I contained 44.12% ( $n=45$ ), Group II – 28.68% ( $n=37$ ),  $\chi^2=1.56$ ;  $p=0.21$ . Smoking contributed to more aggressive development of duodenal ulcer, the effect of the drugs reduced, recurrences and complications occurred, the ulcerous defect healed for a long time.

The evaluation of the interconnection between smoking and social status and education revealed that the better was education and social status, the rarer patients smoked ( $-0.346$ ;  $p=0.025$  and  $-0.396$ ;  $p=0.027$ , respectively).

The patient's interest in the causes of the diseases development and motivation in the full examination is also important for compliant therapy and further dynamic observation. Patients that studied the risk factors that provoke the acute condition try to avoid them in future and timely undergo a full examination. Thus, the knowledge of social status and level of education of the patient can help the doctor to establish a trustful relationship between them. As for the level of education of patients, the patients with hereditary predisposition to ulcerous disease had primarily secondary education and then, higher education in comparison with the second group,  $p>0.05$ .

The questionnaire included questions on family status. It should be noted that single patients tend to be nervous in stressful situations. Disharmony in relations in married patients aggravated the clinical picture of duodenal ulcer. The analysis of family status of the studied patients revealed that 49.02% ( $n=50$ ) of patients with a hereditary predisposition were married and 80.62% of patients were married in the other group ( $n=104$ ). The older the patient, the more they tend to set up a family, Spearman's coefficient, 0.397;  $p=0.004$ . Single young men and women had earlier onset of the disease, Spearman's coefficient 0.53;  $p=0.0001$ .

The majority of patients from Group II 68.99% ( $n=89$ ) lived in a separate apartment in comparison with the group of patients with a hereditary predisposition (92.16% ( $n=94$ ),  $p=0.00003$ ). Regardless of living conditions, hereditary predisposition provokes the disease in combination with other risk factors, Spearman's coefficient - 0.295;  $p=0.049$ .

The analysis of social status showed that there were 63.73% ( $n=65$ ) of workers in Group I, and 72.87% ( $n=94$ ),  $p=0.53$ , in Group II that included patients without a hereditary disposition.

36.27% ( $n=37$ ) of the studied patients with a hereditary predisposition were not influenced by the production factors as compared to 17.83% ( $n=23$ ),  $p=0.003$  in the other group.

The doctor should ask the patient about the working conditions if they can follow the principles of proper nutrition and frequency of meal consumption, if they have to work night shifts for the exclusion of the influence of the nervus vagus on the gastric mucosa and duodenum. The majority of authors believe that stress contributes to the onset and development of the disease in a psycho traumatic, conflict situation. The threshold of stress resistance in different patients was different. It depended on the duration, frequency of stress impact, and peculiarities of higher nervous activity. Patients with duodenal ulcer with a hereditary disposition ( $n=102$ ) had  $210.4\pm 0.7$  points of stress resistance which corresponds with the threshold stress resistance (200 to 299 points). In

Group II, the score was  $175.2 \pm 4.5$  ( $n=129$ ) (150 to 199 points), which corresponded with a high level of stress resistance;  $p=0.0001$ .

Ulcerogenic drugs for cardiologic and musculo-skeletal system diseases contribute to the development of erosive ulcerous defects. The risk of duodenal ulcer development in patients aged 18-60 years old that received non-steroidal anti-inflammatory drugs (NSAID) (aspirin and its analogs, other selective and non-selective non-steroidal drugs) was  $OR=4.31$  (CI 95% 1.9-9.77). In the group of patients with a hereditary predisposition to duodenal ulcer, there were 45 such patients (44.12%), in Group II –  $n=21$  (16.28%),  $p=0.000007$ .

According to different authors, duodenal-gastric reflux is registered in up to 80% of patients with different pathology of the gastrointestinal tract. Bile causes enterolization of epithelial cells, enhances the synthesis of hydrochloric acid, and lyzes protective mucus. In the present study, duodenal-gastric reflux was registered in patients from Group I in 18.63% of cases and in Group II – in 8.53% of cases,  $\chi^2=5.7$ ;  $p=0.038$ .

Genetically determined risk factors of the development of duodenal ulcerous disease include 0(1) blood group – “non-secretory status” (lack of AVN group agglutinogens in the secrets of the organism), lack of the 3<sup>rd</sup> fraction of cholinesterase, lack of intestinal component of alkaline phosphatase, deficit of  $\alpha 1$  antitrypsin, and, probably, of  $\alpha 2$  macroglobulin, the presence of ulcerogenic fraction of pepsinogen in gastric juice, the ability to sense bitter taste of phenylthiocarbamide, and certain alterations in the skin revealed during dactyloscopy. A number of variants of HLA antigens carriership associated with ulcerous disease were identified.

Patients with a hereditary predisposition to duodenal ulcer had blood group I (50.0%) significantly more often than patients from Group II (32.56%,  $p=0.01$ ).

The influence of genetic factors on the formation of duodenal ulcerous disease is understudied. Probably, patients inherit all the complex of neuroendocrine and immunological associations that determine individual rhythmical alterations in functional and morphological parameters. Realization of genetic factors is exerted via the environment. The genetic mechanism should be considered as a factor that can be realized only in combination with other unfavorable factors (infectious, social, professional, etc).

In the group that contained the Tatars, the authors revealed a significant difference in the frequency of the genotype  $A/A$  in the group of patients with duodenal disease and in the control group ( $n=68$ ) 1.2 and 11.76% ( $n=83$ ), respectively,  $\chi^2=5.67$ ;  $p=0.017$  CI 95% (0.011-0.751), and in the distribution of the frequency of the allele A: in the control group ( $n=48$ ) – 35.29%, in the observation group ( $n=38$ ) – 22.89%,  $\chi^2=5.05$ ;  $p=0.025$  CI 95% (0.329-0.902).

The results of the study showed that patients from the Tatar ethnical group had the marker of the development of duodenal ulcer.

The results of the analysis of clinical status of patients showed that the majority of patients ( $87.25 \pm 3.3\%$  ( $n=89$ )) from Group I had typical pain syndrome, while patients from Group II had expressed pain syndrome in  $67.44 \pm 4.1\%$  ( $n=87$ ), which is significantly lower  $\chi^2=11$ ;  $p=0.0008$   $OR=3.3$  (CI 95% 1.66-6.58). Dyspeptic syndrome manifested as gastric dyspepsia (heartburn, belch, etc) was observed in the majority of patients from both groups:  $77.45 \pm 4.1\%$  ( $n=79$ ) and  $65.89 \pm 4.2\%$  ( $n=85$ ),  $p=0.08$ . Progressive development of duodenal disease with often annual recurrence

(more than 2-3 times per year) was registered in  $74.51 \pm 4.3\%$  ( $n=76$ ) of patients with hereditary predisposition, which was significantly more often ( $p < 0.05$ ) than in the group of patients without hereditary predisposition  $44.96 \pm 4.4\%$  ( $n=58$ ),  $\chi^2=19$ ;  $p=0.00001$  OR=3.6 (CI 95% 2.03-6.29). Often recurrences contributed to the long duration of the disease, Spearman's coefficient 0.328;  $p=0.032$ .

Such complications of duodenal ulcer as bleeding, perforation, and stenosing were observed in both groups of comparison. In the subgroup of patients with genetically determined duodenal ulcer, complications were registered in 11.76% ( $n=12$ ) of patients, and in the group of comparison – only in 3.1% ( $n=4$ ) ( $\chi^2=5.4$ ;  $p=0.02$ ; OR=4.2 (CI 95% 1.3-13.4).

In Group I, mirror-like duodenal bulb ulcers were registered in 17.64% of cases ( $n=18$ ),  $\chi^2=23$ ;  $p=0.000002$ . Hyperplasia of the mucosa was registered more often in Group I (23.053% ( $n=24$ )) than in Group II 6.2% ( $n=8$ ),  $\chi^2=13$ ;  $p=0.0003$  OR=4.7 (CI 95% (2.0-10.9)). Active peristalsis remained in 82 (80.39%) patients from Group I and in 120 (93.02%) patients from Group II,  $\chi^2=7.2$ ;  $p=0.007$ ; OR=0.3 (CI 95% 0.13-0.71), pyloric incompetence was registered in 16.67% ( $n=17$ ) of patients from Group I and in 3.88% ( $n=5$ ) of patients in Group II,  $\chi^2=9.4$ ;  $p=0.002$ ; OR=5.9 (CI 95% 1.8-14). Increased acidity was observed in  $81.37 \pm 3.9\%$  ( $n=83$ ) of patients from the observation group and in  $53.49 \pm 4.4\%$  ( $\chi^2=18$ ;  $p=0.00002$ ; OR=3.8 (CI 95% 2.1-7.0)) of patients in the group of comparison.

In the studied group, epithelization during the specified period was registered only in  $88.37 \pm 2.8\%$  ( $n=114$ ) of patients ( $\chi^2=10$ ;  $p=0.001$ ; OR=0.3 (CI 95% 0.16-0.63). Mean time of epithelization of the ulcerous defect in the studied group was  $32.7 \pm 0.1$  days, in the group of comparison –  $27.5 \pm 0.3$  days, respectively ( $p < 0.0001$ ). Rough deformation was revealed in the group with a hereditary predisposition in 25.49% ( $n=26$ ) of patients and in group II – in 6.98% ( $n=9$ ) of patients,  $\chi^2=14$ ;  $p=0.0003$ , OR=4.6 (CI 95% (2.02-10.26).

According to the results of psychological testing, state anxiety in the group of patients without a hereditary predisposition was  $36.7 \pm 0.2$ , which indicated the level of moderate anxiety in the studied patients, and  $44.4 \pm 0.5$ ,  $p=0.0001$  in Group I.

Trait anxiety was  $43.4 \pm 0.1$  points (moderate level of anxiety) in Group II and  $50.1 \pm 0.2$  in group I (high level),  $p=0.0001$ . Mild depressive disorders were revealed in both groups:  $11.5 \pm 0.3$  and  $9.9 \pm 0.2$ ,  $12.4 \pm 0.1$  and  $10.9 \pm 0.5$ , respectively.

The evaluation of the quality of life during the dynamic observation showed that in 12 months and 3 years after the person-oriented educational program on duodenal ulcerous disease, the quality of life of patients increased significantly in all the studied groups according to MOS SF-36. It should be noted that during the period of observation, the quality of life of patients in the observation group was higher than in the group of comparison by all the scales of MOS SF-36.

Thus, multifunctional approach to patients with duodenal ulcerous disease with a hereditary predisposition, diagnostics of the peculiarities of genetic status, clinical picture, and psychoemotional peculiarities allows for an early choice of the tactics of treatment for such patients. It includes timely correction of the risk factors, eradication of *H. pylori*, and observation in the risk group.

## V. CONCLUSION

The present study included patients with duodenal ulcerous disease and revealed the peculiarities of clinical picture of the disease in patients with hereditary predisposition, psychoemotional changes, and positive changes in the quality of life of patients that underwent person-oriented educational program, what, in general, contributed to the choice of the treatment tactics of such patients. The differentiated approach during dynamic observation provides the prevention of recurrences and complications in patients with duodenal ulcerous disease taking into account the risk factors.

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