

**STUDY OF PECULIARITIES OF QUALITY OF LIFE INDICATORS OF PATIENTS
WITH RHINOSINUSITIS IN THE PRIARALIE ZONE*****Abdukayumov A. A. and Usenov S. N.**Republican Specialized Scientific and Practical Medical Center of Pediatrics. Tashkent Pediatric Medical Institute.
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SUMMARY

This article examines the features of the quality of life of patients with rhinosinusitis in the Aral Sea region.

KEYWORDS: quality of life, rhinosinusitis, polypous rhinosinusitis.

The problems of the Aral Sea arose and assumed alarming proportions in the 60s of the XX century, the ecological consequence of which was climate change, with the formation of a salt desert, over which dust storms rage, carrying over 100 million tons of dust and poisonous salts into the atmosphere, which have a threatening effect on environment and livelihoods of millions of people living here.

In recent years, the problem of the incidence of the nasal cavity and paranasal sinuses in children has become particularly relevant. The interconnection of the organs of the upper respiratory sphere and also the huge influence of the environment on the state of its mucous membrane brings these problems to the fore in modern otorhinolaryngology.

Thus, it is possible to endlessly study certain aspects of population health for different classes of diseases, together it is an indicator of medical and social losses of the population. Work on the study of not only health losses and their assessment, but also on the methods of their correction do not stop and have a tendency to grow. The above emphasizes the relevance of further study of this problem, especially in the aspect of studying the role of factors in the development of the disease in a vulnerable child population, improving hygiene regulations and optimizing preventive measures.

Material and research methods. A study was carried out to study the effect of chronic rhinosinusitis on the quality of life in children living in the Aral Sea region. The study included 118 patients, aged from 7 to 18 years, the duration of the disease in them averaged from 1 to 4 years, on average 1.2 ± 0.3 years, who were treated in the period from 2018 to 2020. Boys accounted for 56.8% (n = 67); girls - 43.2% (n = 51). The studies were carried out in the Republic of Karakalpakstan, on the basis of the Republican Children's Medical Center in Urgench and the RSNPMC of Pediatrics in Tashkent. A group of patients living in the Aral Sea region was identified - 66 patients and patients from a safe zone (Tashkent city) - 52 patients.

To solve the problems of the study, two groups of patients were identified in each of the groups, according to the classification of CRS recommended by EPOS, 2012: CRS without nasal polyps (CRSsNP) was found in 94 (79.7%) and patients, CRS with nasal polyps (CRSwNP) - in 24 (20.3%) patients.

Control group (n = 20) - respondents who do not suffer from chronic pathology of the nasal cavity and sinuses, comparable in age and gender to the studied group.

Groups	RS Form	Number of patients	Total by groups	Total
I group Patients with MS in the Aral Sea area	A (CRS)	51	66	112
	B (PRS)	15		
Group II RS patients safe zone	A (CRS)	43	52	
	B (PRS)	9		

The stages of severity of the polyposis process in the paranasal sinuses were determined according to computed tomography data: stage I - parietal thickening of the mucous membrane, stage II - single polyps in the sinus cavity, stage III - damage to the sinus by polyposis process in 2/3 of its volume, stage IV - total damage to the sinus. Patients from the study group had stages III and IV of the prevalence of polyposis process.

An obligatory component of the study was a questionnaire survey using international questionnaires SF-36 to assess the quality of life of patients. The SF-36 questionnaire is the most common general quality of life questionnaire used in patients with chronic pathology. The questionnaire was developed by the RAND Corporation as part of a long-term large-scale project "Evaluation of treatment outcomes" (Medical Outcomes Study) [Ware J., 1995]. The Russian-language versions of the SF-36 quality of life questionnaires were used. The SF-36 (The Short Form-36) questionnaire is a non-specific questionnaire for assessing the patient's quality of life, widely used in studies of the quality of life in Europe and the United States. The questionnaire reflects the general well-being and the degree of satisfaction with those aspects of a person's life that are affected by the state of health. The questionnaire was translated into

Russian and was validated in a population study of the quality of life in Russia [Novik A.A. et al., 2001].

SF-36 consists of 36 questions grouped into eight scales (Table 1). The results are expressed in points from 0 to 100 on each of the eight scales.

Table 1

№	INDICATORS
1.	physical functioning
2.	role-playing activity
3.	bodily pain
4.	general health
5.	viability
6.	social functioning
7.	emotional condition
8.	mental health

The indicators of each scale are compiled in such a way that the higher the indicator value (from 0 to 100), the better the score on the chosen scale and the better the quality of life indicator. The scales are grouped into two indicators: PH ("physical component of health") and MH ("Mental Health" "psychological component of health") (Table 2).

Table 2.

Physical health (PH) Scale components	Psychological component of health (mental health (MH) Components of the scale
physical functioning (physical activity)	mental health;
role-based functioning due to physical condition - the role of physical problems in limitation of life;	role functioning due to the emotional state - the role of emotional problems in limiting life activity;
pain intensity - the volume of subjective pain sensations in the respondent for the last 4 weeks	social functioning - social activity;
general health.	vital activity - vitality

The results are presented in the form of scores on 8 scales, designed in such a way that a higher score indicates a higher level of QOL.

The results are processed as follows

1. Value on the scale "Physical Functioning (PF)".

The points obtained by answering the questions are summed up and the resulting total score is calculated according to the following key.

$$PF = ((PF_{sum} - 10) / 20) * 100$$

2. The value on the scale "Role-Physical Functioning - RP": The scores obtained by answering the questions are summed up and the total score obtained is calculated according to the following key:

$$RP = ((RP_{sum} - 4) / 4) * 100$$

3. Value on the scale "Intensity of pain (Bodily pain - BP)":

scale value according to the formula:

$$BP = [((BP7 + BP8) - 2) / 10] * 100$$

4. Value on the scale "General health (GH)"

The points obtained by answering the questions are summed up and the resulting total score is calculated according to the following key:

$$GH = ((GH_{sum} - 5) / 20) * 100$$

5. Value on the scale "Vitality (VT)"

The scores obtained by answering the questions are summed up and the resulting total score is calculated according to the following key 4) Calculate the scale value using the formula:

$$VT = ((VT_{sum} - 4) / 20) * 100$$

6. Value on the scale "Social Functioning (SF)"

The amount is calculated: $SF_{sum} = SF6 + SF10$

scale value according to the formula: $SF = ((SF_{sum} - 2) / 8) * 100$

7. Value on the scale "Role functioning due to emotional state (Role-Emotional - RE) "

scale value according to the formula: $RE = ((RE_{sum} - 3) / 3) * 100$

8. Value on the scale "Mental Health (MH)" scale value according to the formula: $MH = ((MHsum - 5) / 25) * 100$

9. The value of the general indicators "Physical health component (PH)" and

"Psychological component of health (Mental Health - MH)" is the Z-score on eight scales of the questionnaire according to the formulas.

$$PF-Z = (PF - 84.52404) / 22.89490$$

$$RP-Z = (RP - 81.19907) / 33.797290$$

$$BP-Z = (BP - 75.49196) / 23.558790$$

$$GH-Z = (GH - 72.21316) / 20.16964$$

$$VT-Z = (VT - 61.05453) / 20.86942$$

$$SF-Z = (SF - 83.59753) / 22.37642$$

$$RE-Z = (RE - 81.29467) / 33.02717$$

$$MH-Z = (MH - 74.84212) / 18.01189$$

The value of the indicator "Physical component of health (PH)" by the formula:

$$PHsum = (PF-Z * 0.42402) + (RP-Z * 0.35119) + (BP-Z * 0.31754) + (SF-Z * -0.00753) + (MH-Z * -0.22069) + (RE-Z * -0.19206) + (VT-Z * 0.02877) + (GH-Z * 0.24954)$$

$$PH = (PHsum * -10) + 50$$

The value of the indicator "Mental health component (MH)"

$$MHsum = (PF-Z * -0.22999) + (RP-Z * -0.12329) + (BP-Z * -0.09731) + (SF * -0.26876) + (MH-Z * -0.48581) + (RE-Z * -0.43407) + (VT-Z * -0.23534) + (GH-Z * -0.01571)$$

$$PH = (MHsum * -10) + 50$$

Collection of clinical data. The collection of clinical data was carried out at the same time, within which the quality of life of patients was assessed. The data were entered into the patient's clinical card based on information from the medical history and patient interviews. The patient's clinical chart contained the socio-demographic and clinical information required for data analysis. A separate clinical chart was developed for each group of patients. When studying the quality of life in the course of treatment, the following variants of clinical charts were developed - a patient's chart before treatment, a dynamic observation chart, a patient's chart after the end of treatment. The completion of the corresponding clinical card of the patient was carried out at each point of the examination.

In parallel, a study of objective indicators was carried out: an assessment of the severity of obstruction of the nasal cavity and paranasal sinuses (according to a 4-point system) before and after treatment using the following research methods: endoscopy of the nasal cavity and nasopharynx, computed tomography of the paranasal sinuses.

Table 3

Treatment effectiveness criteria	
Effectiveness	Criteria
Excellent	Rapid relief of symptoms, restoration of nasal breathing within 10 days, no discharge.
Good	Positive dynamics, restoration of nasal breathing with recurrent congestion, minor mucous membranes that easily come out.
Satisfactory	Delay of recovery and improvement of nasal breathing with frequent congestion, preservation of mucous discharge
Unsatisfactory	Absence of changes in the course of the disease, unexpressed improvement in nasal breathing, abundant mucous discharge

Clinical trial results

Clinical and functional characteristics of patients were carried out according to the criteria presented in Table 3, based on the following indicators: complaints of nasal and nasopharyngeal discharge, pain, nasal breathing, rhinoscopy data and computed tomography indicators.

When analyzing the initial state of patients, it was found that pain in the paranasal sinus area was noted by 21.2% of patients in group 1, in group 2 - in 5.8%, while pain was noted by patients only in groups with CRS. The frequency of complaints of discharge from the nose and nasopharynx did not differ (groups 1 and 2 - 28.8% and 25%, respectively), as well as the severity of nasal breathing disorders (groups 1 and 2 - 87.9% and 86.5%,

respectively) ... Already after treatment, 52.2% of patients in group 1, who initially experienced pain, showed a decrease in pain, in 10.5% of patients - its disappearance, and in 8.7% of patients the intensity of pain changed (from constant it became periodic). In 78.2% of patients with periodic pain after a month, it disappeared, and in 21.7% it sharply decreased in duration and frequency. Disappearance of pain and normalization of nasal breathing in patients of group 1 occurred earlier than in patients of group 2. When analyzing the dynamics of treatment of patients with PRS, it was found that the normalization of the rhinoscopic picture in patients receiving complex treatment was observed on average one month earlier

than in patients of the group receiving conservative treatment (Table 4).

Table 4: Results of treatment of patients with polyposis rhinosinusitis one month after the start of treatment.

Treatment results		
Effectiveness	Group 1 N=66	Group 2 N=52
Excellent	24 (36%)	-
Good	28 (42,4%)	23 (44,2%)
Satisfactory	9 (13,6 %)	17 (32,7%)
Unsatisfactory	5 (7,5%)	11 (21,2%)
Total	66	52
P<0,05		

Results of the study of the quality of life of patients with polyposis rhinosinusitis in the dynamics of treatment

Violation of nasal breathing leads to a number of related problems: lack of appetite, sleep disturbance and decreased ability to work, impaired concentration. All of the above leads to the fact that a patient with impaired nasal breathing is in a constant stressful situation, aggravating the course of the underlying disease.

The study of the quality of life in rhinology should be carried out in accordance with a specific algorithm. The structure of a universal algorithm for studying the quality of life in patients with rhinosinusitis was developed taking into account the peculiarities of the pathogenesis of the disease, the physiology of the nose and sinuses, and methods of treating the disease in this group. The algorithm for assessing the quality of life is based on adherence to a strict sequence of research stages. The study of the quality of life in patients with rhinosinusitis includes the following stages: development of a study protocol, examination of patients, data collection, creation and maintenance of a database, scaling of questionnaire data, statistical processing, analysis and interpretation of results.

General characteristics of the quality of life and spectrum of symptoms in patients with rhinosinusitis.

Characteristics of the occurrence of symptoms in patients with rhinosinusitis are presented in table. 2.

In accordance with the set goals and objectives, we analyzed the characteristics of the quality of life of patients according to SF - 36, depending on age. (table3).

Table 5: Analysis of QOL of patients by study group.

Age		SF questionnaire scales - 36							
		PhA	Rph	P	GH	VT	SA	RE	MH
Control group (n=30)		68,8± 2,2	66,2 ± 4,2	78,2 ± 1,8	59,4 ± 3,7	55,2 ±4,1	73,1 ± 3,1	69,1 ± 2,7	67,2 ± 3,2
I group Aral Sea region	A (CRS) (n = 16)	46,2± 1,3***	40,1 ± 5,1***	61,7 ± 1,3	43,4 ± 1,8***	48,7 ± 2,4	61,7 ± 2,7	51,2 ± 1,7***	53,7 ± 3,1*
	B (PRS)	32,3± 2,8**	27,8 ± 1,9*	51,3 ± 2,1	33,2 ± 3,2***	34,8 ± 1,7**	49,7 ± 1,1*	41,1 ± 6,1	41,7 ± 2,1***
II group safe zone	A (CRS) (n = 12)	56,2 ± 1,7	61,3 ± 2,3	60,1 ± 1,3	55,8 ± 1,2	54,8 ± 2,1	67,3 ± 2,1	56,9 ± 2,1	59,1 ± 1,7
	B (PRS)	46,2± 1,3***	40,1 ± 5,1***	61,7 ± 1,3	43,4 ± 1,8***	48,7 ± 2,4	61,7 ± 2,7	51,2 ± 1,7***	53,7 ± 3,1*

Note: The p values are compared to the previous group. * <0.05; ** <0.01; *** <0.001. PhA - physical activity, RPh - the role of physical problems in limiting life activity, P - the volume of subjective pain sensations in the respondent over the last 4 weeks, GH - general health, VT - vitality, SA - social activity, RE - the role of emotional problems in limiting life activity, MH - mental health.

The comparison of QOL parameters in patients of the two groups with the corresponding control groups confirmed that polyposis rhinosinusitis decreases QOL in both the first and second groups, while it is 2 times lower in the first group than in the control group.

There is a natural relationship between the level of QOL decrease and the prevalence of the polyposis process. Patients with mild course on most of the scales did not differ significantly from the control group, they had significantly reduced indicators of "physical activity" and "vitality". Thus, the first stage of the disease has a minimal effect on the QOL of patients, limiting only physical activity and vitality. With a moderate course - which characterizes the degree of obstruction of the nasal

cavity - the quality of life is significantly lower in all parameters, in contrast to patients with a mild course. First of all, this concerns a decrease in the scales characterizing physical status. On the part of psychosocial status, with a moderately severe prevalence of the process, the role of the emotional state, pain sensations significantly increases, and the level of social activity decreases. At the third stage of the disease, there is not only a quantitative decrease in the quality of life indicators, but also their qualitative change - a sharp decrease in the parameter "mental health" (48.1 481.1).

So, the parameters of the quality of life are largely determined by the severity of the symptoms of the disease, functional parameters, duration and severity of

the course of chronic rhinosinusitis in general. As the disease progresses, the components of the quality of life decrease, which characterize not only the physical, but also the psychoemotional status of the patient, which, as a rule, is given much less importance in the practice of managing patients with polyposis rhinosinusitis (PRS).

Violation of nasal breathing leads to a number of related problems: lack of appetite, sleep disturbance and decreased ability to work, impaired concentration. Under the influence of environmental factors (in the form of exo- and endointoxication), dysregulation of the homeostasis system develops on the body, which is manifested by correlative changes in pairs “circulating endothelial cells - von Willebrand factor” indicating the tension in the functioning of the endothelium system and the development of regulation failures and disruptions. All of the above leads to the fact that a patient with impaired nasal breathing is in a constant stressful situation, aggravating the course of CRS, which was especially pronounced in patients with polypous rhinosinusitis in patients from the Aral Sea region. Thus, the indicators of the quality of life of rhinosinusitis are significantly reduced in comparison with the control data both in patients from the safe zone and from the Aral Sea region, which indicates that rhinosinusitis itself is a disease that significantly affects the quality of life. The development of polyposis rhinosinusitis worsens the quality of life of patients from the Aral Sea area almost two times lower than in the control group - this is an integral characteristic of the physical, psychological, emotional and social functioning of the patient, based on his subjective perception.

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