Global Journal of Medical Research: F
Diseases
Volume 22 Issue 6 Version 1.0 Year 2022
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Features of the Clinical Course of Urinary Stone Disease in the Farming Population

By Mamasaliev N.S., Abdurakhmonov B.M. & Qurbonova R.R.

Andijan State Medical Institute

Abstract- In the climatic conditions of the Fergana Valley of Uzbekistan, 2478 people aged 18-70 engaged in farming were studied in a one-time epidemiological study. Questionnaire, clinical, biochemical, instrumental and special urological examination methods were used. The clinical symptoms of urolithiasis are determined to have a number of specific features, including risk factors and comorbidity. Severe urolithiasis and exacerbation of symptoms are observed in patients with a risk factor of 12.8 times, and in the presence of comorbidity - up to 45.7%.

Keywords: farmer population, urolithiasis, clinical course, risk factors, epidemiology, comorbidity.

GJMR-F Classification: DDC Code: 616.622 LCC Code: RC916

Strictly as per the compliance and regulations of:

Features of the Clinical Course of Urinary Stone Disease in the Farming Population

Mamasaliev N.S. [α], Abdurakhmonov B.M.[σ] & Qurbonova R.R. [ρ]

Abstract- **In the climatic conditions of the Fergana Valley of Uzbekistan, 2478 people aged 18-70 engaged in farming were studied in a one-time epidemiological study. Questionnaire, clinical, biochemical, instrumental and special urological examination methods were used. The clinical symptoms of urolithiasis are determined to have a number of specific features, including risk factors and comorbidity. Severe urolithiasis and exacerbation of symptoms are observed in patients with a risk factor of 12.8 times, and in the presence of comorbidity - up to 45.7%.**

Keywords: farmer population, urolithiasis, clinical course, risk factors, epidemiology, comorbidity.

I. Introduction

The study of methods of early diagnosis, rates of spread and clinical features of urolithiasis in epidemiological research will help to develop guidelines for the prevention and treatment of the disease in different regions and groups, to reduce disability and mortality, socio-economic losses.

Analysis of available scientific sources confirms these ideas and testifies that this disease is one of the most common diseases [1,2,3].

Another conclusion from the research is that in urolithiasis-related treatment and prophylaxis programs and scientific directions, high-tech-based activities and practices are given more prominence than screening approaches. Based on them, most of the conclusions and recommendations are in the form of "sessile" medical guidelines. In other systemic diseases, it began to develop the opposite, and thus, it was proved that significant and guaranteed positive results could be obtained [4, 5, 6, 7]. It has been proven by many researchers that the foremost effective method in large-scale examinations among the population living in different regions and conditions is to rescue patients from urinary stones and then carry out active prophylaxis [8, 9, 10]. Such scientific and practical activity allows to effectively prevent a large number of complications and recurrent course of urolithiasis [11, 12].

*The aim of the study*was to study and evaluate the clinical features of urinary stone disease in the farming population in the Fergana Valley of Uzbekistan.

II. Research Material and Methods

In the Pakhtaabad climatic zone of the Fergana Valley, 2,478 ≤17-year-olds and ≥18-70-year-old farmers were involved in a one-time epidemiological study and were fully screened. Questionnaire, clinical, biochemical, instrumental and special urological examinations were used in the screening. The questionnaire used was approved by the Ethics Committee of the Ministry of Health of Uzbekistan and approved for use in epidemiological surveys (Kayumov UK, 2020). It provides an opportunity to make a complete epidemiological diagnosis of non-communicable diseases, in particular, urolithiasis and its risk factors (XO).

Ultrasound examinations for the detection of urolithiasis at the prenosological and nosological stages in Toshiba-SAL-32V, ultrasound scanning of urinary tract organs in the SAL-50 ultrasound scanner of the Japanese company "Aloka", 12 connections in ECG mode using electrography "6-NEK", Exo-KG and chest radiography and anthropometric measurements (according to the formula Kettle index = body weight (kg)/height (m^2)).

In the examined population, general analysis of blood and urine, and biochemical parameters were analyzed and studied. Their examination (indicators of total cholesterol, triglycerides, glycemia, uricemia, water-salt and mineral metabolism/blood electrolytes in the blood plasma, indicators of protein metabolism) was carried out using traditional methods widely used in treatment and prevention facilities. Based on international clinical and epidemiological recommendations, urolithiasis risk factors, general urinalysis, and sediment microscopy were studied, evaluated, and used as diagnostic criteria [13].

The following were accepted as the basic diagnostic criteria for urolithiasis or urolithiasis diagnosis was made when they were available [UAE, 2014; Yuldashev F.Yu., 1994]:

- Kidney and urinary tract stones diagnosed by Ultrasound method in the kidneys and upper urinary tract;
- Anamnestic data;
- Renal succulent detection detected by Ultrasound, salt crystals located in the cavities of the pelvic system, and again, salt crystals (SC) found in urine microscopy.

Author α σ ρ: Andijan State Medical Institute, Andijan, Uzbekistan.
e-mail: author.uzb@mail.ru

The farmer population found in SC constituted a risk group.

a) Statistical verification methods

The statistical analysis used Epi Info and Excel 2021 from the Microsoft Office suite. In the study, the effectIn assessing the relationship between the causal factor and the consequence, the risk ratio of biostatistics, a 95% confidence interval to extrapolate the detected risk ratio, was calculated as Xi^2 and R on the Pearson criterion in order to determine the statistical significance of the data obtained. As a result of the single-factor analysis, all influencing factors found to be statistically significant were studied in Mantel-Henszel's multivariate analysis and based on extrapolation. All detected risk ratios and 95% confidence intervals were compared at the logarithmic growth rate in the Forest Plot diagrams.

III. Results and Discussion

Undoubtedly, the study of the regional features of the clinical course of urolithiasis in the farming population in the context of the new Uzbekistan is important. The reason is that such research has not been done at the population level. This topical scientific problem has also been the 'target object' of our study, and we have concluded that the main and specific urological symptoms of urolithiasis have a number of specific features in the farming population. Table 1 and Figure 1 show the prevalence of the main symptoms of urolithiasis in the farming male and female populations.

It turns out that the prevalence of the main symptoms of urolithiasis, with a difference in urolithiasis in male farmers and women, is recorded as follows *(Table-1):*

sudden renal puncture -13.1% and 4.1% ($R_1 > 0.005$; $R_2 < 0.01$),
low back pain - from 70.4% and 57.6% ($R_1 > 0.005$; $R_2 < 0.05$),
severe pain - from 9.2% and 7.0% ($R_1 > 0.005$; $R_2 > 0.05$),
dyspeptic symptoms - from 19.9% and 10.1% ($R_1 > 0.005$; $R_2 < 0.05$),
hematuria - from 11.2% and 8.3% ($R_1 > 0.005$; $R_2 > 0.05$),
dysuria - from 82.3% and 74.9% ($R_1 > 0.005$; $R_2 < 0.05$),
oligoanuria - from 27.4% and 15.8% ($R_1 > 0.005$; $R_2 < 0.05$),
dizziness - from 61.2% and 70.5% ($R_1 < 0.05$; $R_2 < 0.05$),
obmorok - from 40.8% and 36.7% ($R_1 > 0.005$; $R_2 > 0.05$),
bradycardia - from 4.9% and 5.2% ($R_1 < 0.05$; $R_2 > 0.05$) and
increased pain on palpation of the lumbar region - from 54.1% and 41.9% ($R_1 > 0.005$; $R_2 < 0.05$).

Table-1: Epidemiological characterization of the prevalence of the main symptoms of urolithiasis in the farmer population

The main clinical signs of urolithiasis	The farmer is a man			R	Farmers are women			The general population of farmers		
	n	urolithiasis			n	urolithiasis		n	urolithiasis	
		Absolute number	Percentage			Absolute number	Absolute number		Absolute number	Percentage
Acute renal colic	54	412	13.1	> 0.005	16	387	4.1	70	799	8.8
Location of pain in the lumbar region	290	412	70.4	> 0.005	223	387	57.6	513	799	64.2
Extreme pain	38	412	9.2	> 0.005	27	387	7.0	65	799	8.1
Dyspeptic symptoms	82	412	19.9	> 0.005	39	387	10.1	121	799	15.1
Hematuria	46	412	11.2	> 0.005	32	387	8.3	78	799	9.8
Dysuria	339	412	82.3	> 0.005	290	387	74.9	629	799	78.7
Oligoanuria	113	412	27.4	> 0.005	61	387	15.8	174	799	21.8
Dizziness	252	412	61.2	> 0.05	273	387	70.5	525	799	65.7

Obmork	168	412	40.8	> 0.005	142	387	36.7	310	799	38.8
Bradycardia	20	412	4.9	> 0.05	20	387	5.2	40	799	5.0
Increased pain on palpation of the lumbar region	223	412	54.1	> 0.005	162	387	41.9	385	799	48.2

The main symptoms of urolithiasis are divided into three groups according to the frequency of prevalence in the general population of farmers: “symptoms with very high prevalence”, “symptoms with moderate prevalence” and “rare symptoms with reliable differentiation”. The symptoms of the first group include the following, ie they are noted with high frequencies: dysuria - 78.7%, dizziness - 65.7% and the location of pain in the lumbar region - 64.2%. The symptoms of the second group and the percentage of their recording are as follows: increased pain on palpation of the lumbar region - 48.2%, rheumatism - 38.8%, oligoanuria - 21.8% and dyspeptic symptoms - 15.1%. The symptoms of the third group are 4 and are confirmed by the following percentages: bradycardia - 5.0%, hematuria - 9.8%, severe pain - 8.1% and acute renal failure - 8.8%.

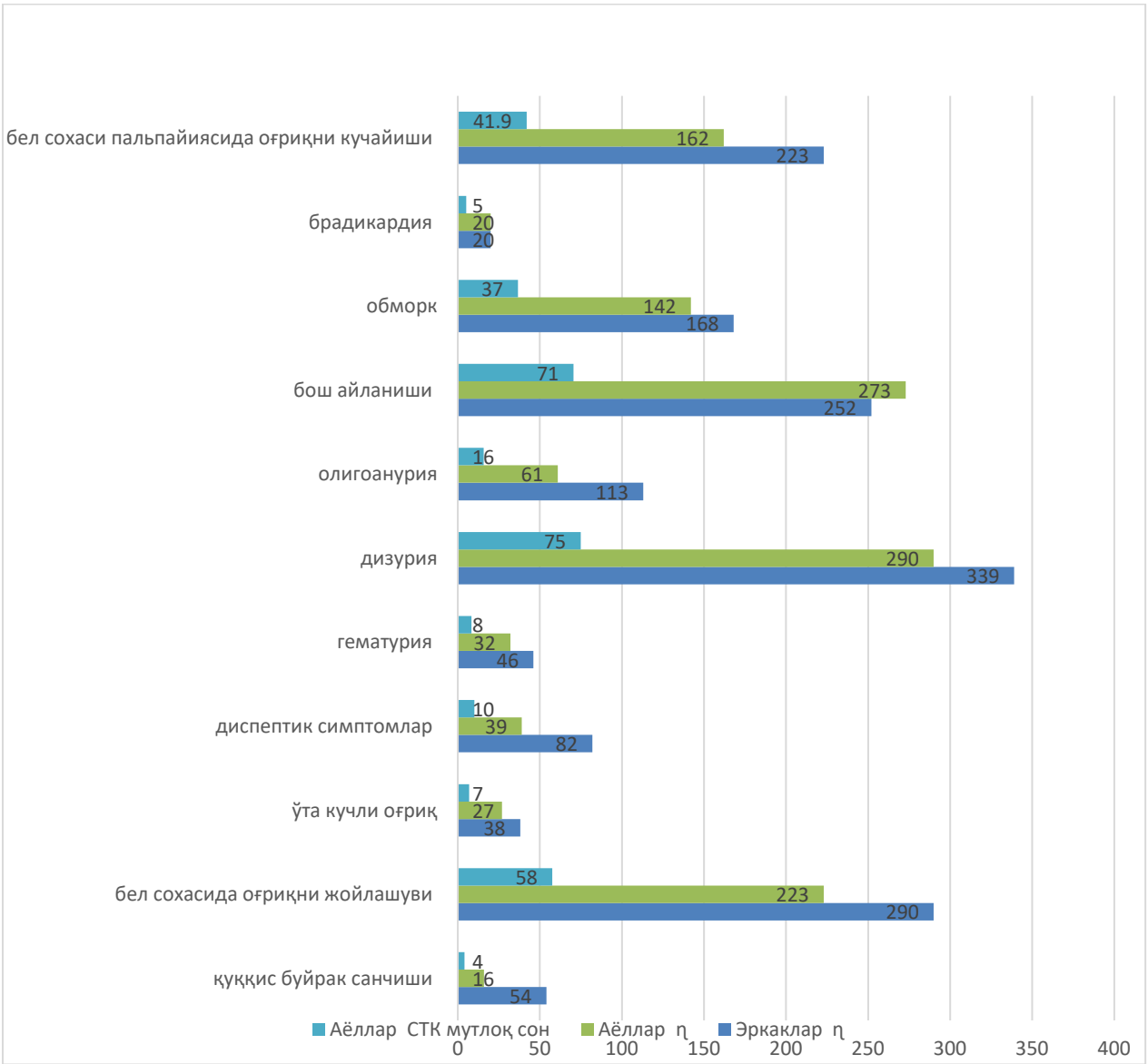

Figure-1: Features of the expression of specific symptoms of urolithiasis in the farming population

Table 2 and Figure 2 describe the epidemiological characterization of the prevalence of major urological symptoms in the farmer population with urolithiasis (STOP) and without urolithiasis (STSP). It follows that in the STOP-male population and in the STSP-male population, the main urological symptoms of urolithiasis are determined by significant differences:

- sudden renal colic - from 13.1% and 1.6% (R <0.05);
- location of pain in the lumbar region - 70.4% and 32.2% (R <0.05);
- severe pain - from 9.2% and 1.2% (R <0.05);
- dyspeptic symptoms - from 19.9% and 2.2% (R <0.05);
- hematuria - from 11.2% and 0.7% (R <0.05);
- dysuria - from 82.3% and 4.3% (R <0.05);
- oligoanuria - from 27.4% and 2.7% (R <0.05);
- dizziness - from 61.2% and 10.0% (R <0.05);
- obmorok - from 40.8% and 4.7% (R <0.05);
- bradycardia - from 4.9% and 2.3% (R <0.05);
- increased pain on palpation of the lumbar region - from 54.1% and 3.5% (R <0.05).

Table-2: Epidemiological characteristics of the prevalence of urological symptoms in the population of farmers with urolithiasis (STOP) and non-STP (STSP)

Basic urological symptoms	STOP male population			R	STS male population			STOP female population			R	STS female population		
	n	urolithiasis			n	urolithiasis		n	urolithiasis			n	urolithiasis	
		Mut-loqson	%			Mut-loqson	%		Absolute number	%			Mut-loqson	%
Acute renal colic	54	412	13.1	<0.05	13	823	1.6	16	387	4.1	<0.05	12	790	1.6
Location of pain in the lumbar region-vi	290	412	70.4	<0.05	265	823	32.2	223	387	57.6	<0.05	254	790	32.2
Extreme pain	38	412	9.2	<0.05	10	823	1,2	27	387	7.0	<0.05	10	790	1,2
Dyspeptic symptoms	82	412	19.9	<0.05	18	823	2.2	39	387	10.1	<0.05	17	790	2.2
Hematuria	46	412	11.2	<0.05	6	823	0.7	32	387	8.3	<0.05	6	790	0.7
Dysuria	339	412	82.3	<0.05	35	823	4.3	290	387	74.9	<0.05	34	790	4.3
Oligo-anuria	113	412	27.4	<0.05	22	823	2.7	61	387	15.8	<0.05	21	790	2.7
Dizziness	252	412	61.2	<0.05	82	823	10.0	273	387	70.5	<0.05	79	790	10.0
Obmork	168	412	40.8	<0.05	39	823	4.7	142	387	36.7	<0.05	37	790	4.7
Bradycardia	20	412	4.9	<0.05	19	823	2.3	20	387	5.2	<0.05	18	790	2.3
Increased pain on palpation of the lumbar region	223	412	54.1	<0.05	29	823	3.5	162	387	41.9	<0.05	28	790	3.5

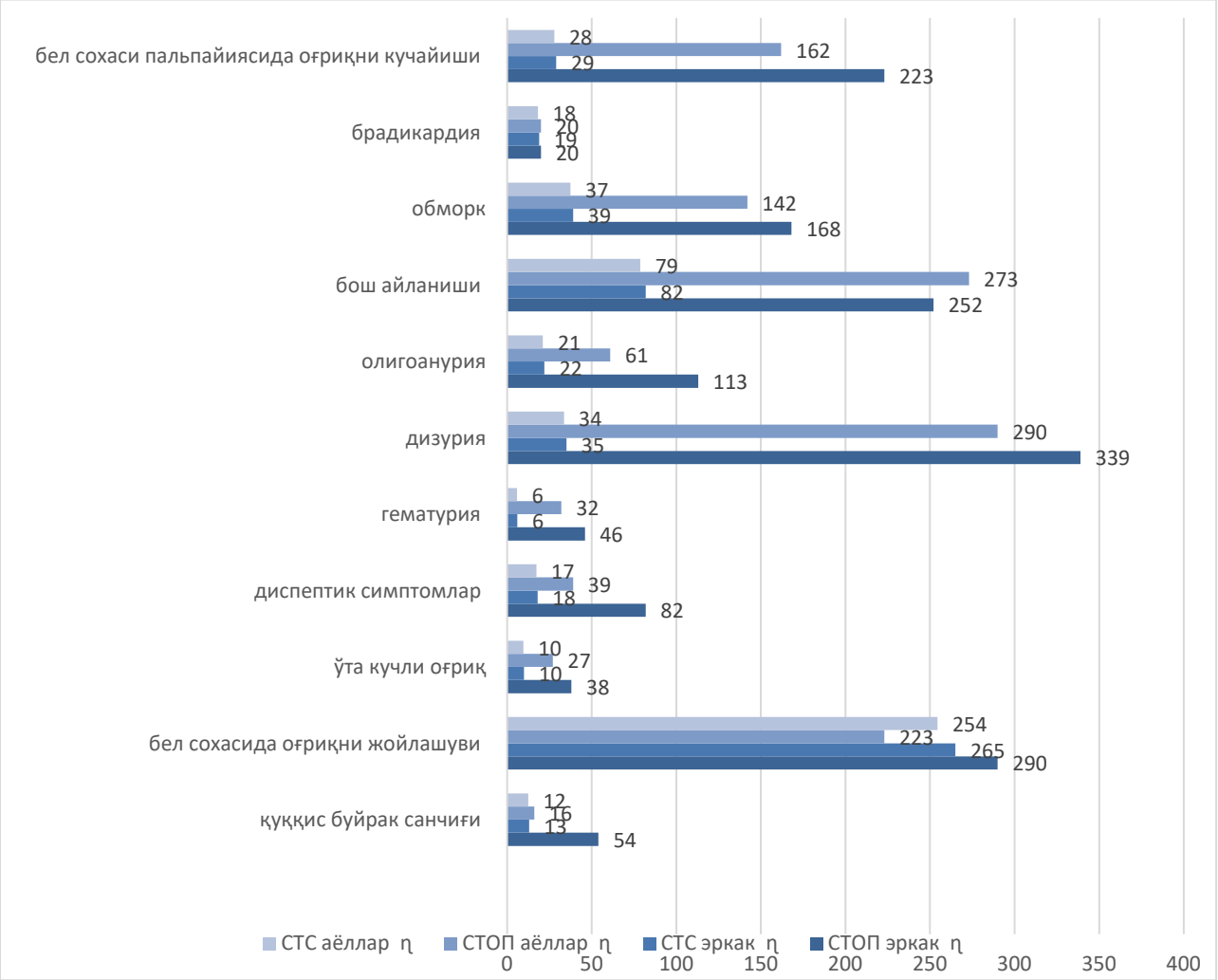

Figure-2: Features of the expression of urological symptoms in the population of patients with urolithiasis (WUL) and non-urolithiasis (NUL).

In our subsequent analyzes, the contributions of the main risk factors to the onset and exacerbation of clinical symptoms of urolithiasis were studied and evaluated (shown in Table 3 and Figure 3).

According to the results of the analysis, against the background of risk factors, the onset and exacerbation of the total symptoms of urolithiasis increases.

Table-3: Comparative description of the main risk factors contributing to the onset and exacerbation of symptoms of urolithiasis in the farmer population

№	Urolithiasis of basic symptoms	Inspection teams (XO available)			R	Inspection teams (no XO)			R
		XO+ urolithiasis (absolute number)	XO total number	Percentage		urolithiasis without risk factors (absolute number)	XO total number	Percentage	
1.	Acute renal colic	70	79	8.7	> 0.005	25	1613	1.5	<0.001
2.	Location of pain in the lumbar region	513	799	64.2	> 0.005	519	1613	32.1	<0.001
3.	Extreme pain	65	799	8.1	> 0.005	20	1613	1,2	<0.001
4.	Dyspeptic symptoms	121	799	15.1	> 0.005	35	1613	2.2	<0.001
5.	Hematuria	78	799	9.7	> 0.005	12	1613	0.7	<0.001
6.	Dysuria	629	799	78.7	> 0.005	69	1613	4.3	<0.001
7.	Oligoanuria	174	799	21.7	> 0.005	43	1613	2.7	<0.001

8.	Dizziness	525	799	65.7	> 0.005	161	1613	9.9	<0.001
9.	Obmorok	310	799	38.7	> 0.005	76	1613	4.7	<0.001
10.	Bradycardia	40	799	5.0	> 0.005	37	1613	2.2	<0.001
11.	Increased pain on palpation of the lumbar region	385	799	48.1	> 0.005	57	1613	3.5	<0.001

For example, in the population examined for the presence and absence of XO, the clinical symptoms of urolithiasis are determined by the following prevalence:

- sudden renal puncture - from 8.7% and 1.5% (R <0.001),
- location of pain in the lumbar region - from 64.2% and 32.1% (R <0.01),
- severe pain - from 8.1% and 1.2% (R <0.001),
- dyspeptic symptoms - from 15.1% and 2.2% (R <0.001),
- hematuria - from 9.7% and 0.7% (R <0.0001),
- dysuria - from 78.7% and 4.3% (R <0.001),
- oligoanuria - from 21.7% and 2.7% (R <0.001),
- dizziness - from 65.7% and 9.9% (R <0.001),
- obmorok - from 38.7% and 4.7% (R <0.001),
- bradycardia - from 5.0% and 2.2% (R <0.01) and
- increased pain on palpation of the lumbar region - from 54.1% and 3.5% (R <0.05).

When there is more than 1 or 2 risk factors in the client population with urolithiasis, its clinical severity increases to 12.8 times. Hence, emergency and planned therapy require that priority be given to both primary and secondary prevention of urolithiasis. Adaptation of risk factor correction to the treatment process, in patients with urolithiasis, is appropriate.

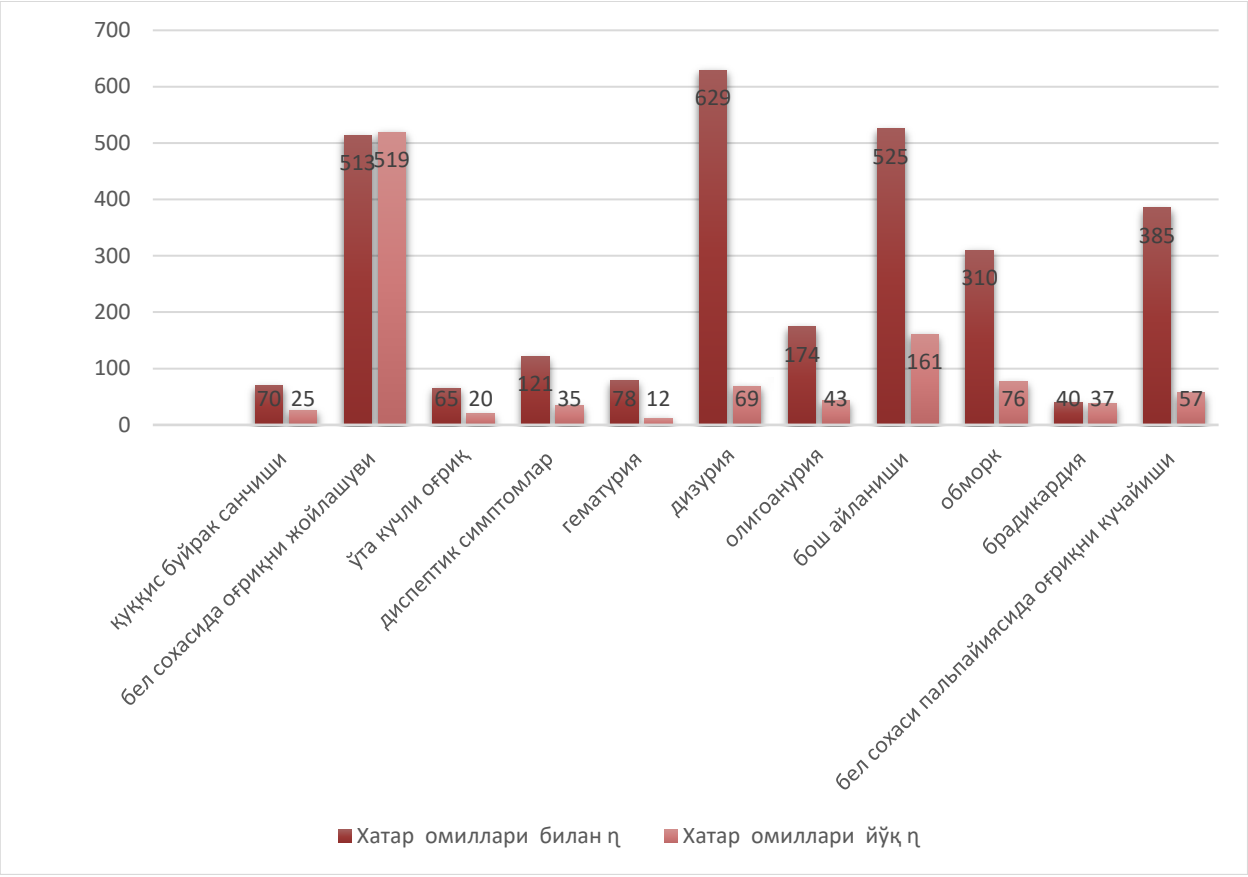

Figure 3: Features of the detection of symptoms of urolithiasis, depending on risk factors

It was also found from our analysis that urolithiasis occurs in most cases on the background of comorbidity (simultaneous involvement of more than two diseases) (our research in this area is numerically described in Figure 3 and Table 4.

Comorbidity ≥is determined by a 45.7 percent prevalence in the general population of 18–70-year-old farmers (Table 4) and exhibits age-dependent formation characteristics. It is noted in different ages with a specific distribution:

- 18-30 years old - 20.0%;
- 31-49 years - 49.9% (with a 2.5-fold increase; R <0.01);
- 50-69 years - 27.9% (with a 1.3-fold increase; R <0.05);
- ≥At the age of 70 - 2.2% (with a decrease of 10 times; R <0.001).

Table-4: Epidemiological characterization of comorbidity in the farming population

Inspection groups	Age groups									
	18-30 years old		31-49 years old		59 69 years old		≥70 years old		≥18-70 years old	
	In the absolute number	Percentage	In the absolute number	Percentage	In the absolute number	Percentage	In the absolute number	Percentage	In the absolute number	Percentage
Farmers are men	38	52.1	98	53.9 IT	74	72.6 x	5	62.5 x	215	58.9
R	<0.005		<0.005		<0.005		<0.005		<0.005	
Farmers are women	35	47.9	84	46.2 IT	28	27.5 x	3	37.5 x	150	41.1
The general population of farmers	73	20.0	182	49.9 xx	102	27.9 x	8	2.2 xxx	365	45.7

Note: • $Xi^2 = 0.05$; • RR = 1.01; • R > 0.05.

With age, comorbidity is detected at different frequencies or observed with a difference. This epidemiologically specific gender view is evident in the following percentage frequencies in male farmers and women:

- 18-30 years - from 52.1% and 47.9% (R <0.005);
- 31-49 years - 53.9 percent (increased by 1.8 percent, R> 0.05) and 46.2 percent (decreased by 1.7 percent, R> 0.05), R <0.005;
- 50-69 years - 72.6 percent (increased by 20.5 percent, R <0.05) and 27.5 percent (decreased by 20.4 percent, R <0.05), R <0.005;
- ≥At the age of 70 - 62.5% (increased to 10.4%, R <0.05); R> 0.005;
- 37.5 percent (with a decrease of 10.4 percent, R <0.05); R> 0.005.

References Références Referencias

1. Arutyunov G. P., Tarlovskaya E. I., Arutyunov A. G., Belenkov Yu.N. and dr. International Register "Analysis of the dynamics of comorbidities in patients with advanced SARS - COV -2 (ACTIVE SARS) COV –2)": Analysis of 1000 patients // Rossiyskiy kardiologicheskiy journal. - 2020. - 25 (11): 98-107.
2. Kayumova M. M., Akimov M. Yu., Gafarov V. V. Populyatsionnye vrajdebnosti sredi naseleniya sredneurbanizirovannogo naseleniya Sibirskogo goroda: vozrastnыe i gendernye aspekty // Rossiyskiy kardiologicheskiy zhurnal. 25 (6): 68-72.
3. Chasovskix G. A. Issledovaniya evolyutsii morali kak kommunikativnyy instrument v otnoshenii vrach-patsient // Rossiyskiy kardiologicheskiyurnal. - 2020, - 25 (9): 60-65.
4. Shestaev A. Yu., Protoshchak V.V., Paronnikov M. V., Kiselov A. O. Kombinirovannyy (citratnyy i rastitelnyy) preparations of uric acid in distant lithotripsy and metaphylactic urinary tract disease// Urologicheskie vedomosti. - 2018. - Tom8. - №1. - S. 19-25.
5. Avdoshin VP, Andrukhin MI, Israfilov MN Kompleksnoe lechenie I metaphylaxis uratnogo I smeshannogo urolithiasis// Moscow: Special issue ;2013.
6. Kaprin AD. Apolikhin OI, SivKov Av et al. Analysis of uronephrological morbidity and mortality in the Russian Federation for the period 2002-2014 according to official statisies// Experimental and clinical erology.- 2016; (3): 4-13.
7. Voshhula VI Mocherfmennya bolezn: etiotropnol I pathogenetiches - Koe lechenie , prophylaxis - Minsk :VEVEKE ;2006.
8. Kasote DM, Jadtap SD, Thapa D. et al. Herbal remedies for urinary stones used in India and China: A review// J Ethnopharmacol.- 2017 :203 :55-68.doi: 10.1016 / j.jep.2017.03.038.
9. Turk G, Petrik A, Sarica K. et al EAU Guidelines on Diagnosis and Conservative Management of Urolithiasis// EUR UROL.- 2016; 69 (3): 468-474. doi :10.1016 / j.eururo.2015.07.040.

10. Ziemba JB, Matlaga BR Epidemiology and economic of nephrolithiasis// Investig Clin Urol.- 2017; 58(5):299-306. doi:10.4111/ icu. 2017. 58. 5. 299.
11. Skolarikos A, Grivas N., Kallidonis P. et al The efficacy of Medical Expulsive Therapy (MET) in improving stone- free rate and stone expulsion time, after extracorporeal shock wave lithotripsy (SWL) for upper urinary stones :a systematic review and meta-analysis//Urology. 2015; 86 (6): 1057-1064. doi: 10.1016/ J. urology. 2015.09.004.
12. Shestaev AYu , Paronnikov MV, Protoshchak VV etal. A efficiency of preventive treatments for recurrence of patients with urolithiasis and metabolic syndrome. Heraid of North- Western State Medical University named atter II Mechnikov.- 2013; 5 (2): 85-89.
13. Urology. Rossiyskie klinicheskie rekomendatsii// Pod red. Yu. G. Alieva et al.- M.: GEOTAR- Media.- 2016.- p. 196.