

**MYOCARDIAL INFARCTION IN FERGANA VALLEY (RESULTS OF 21 YEARS OF MONITORING)**

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Globally, including in Uzbekistan, reperfusion strategy, pharmacoinvasive approach, primary PKA or thrombolytic therapy remain the standard of emergency medical care for patients with myocardial infarction. However, it is evident from the available scientific sources and the research conducted in this direction that social, economic, epidemiological and territorial (regional, geographical) risk factors (XO) are very little taken into account or not emphasized at all.

The problems of predictive, preventive and especially urgent prevention of modern myocardial infarction (MI) " started to appear " . But most of them have been observed in clinical trials or only in small number of registry studies. It is noticeable that there are very few special epidemiological, especially prospective studies based on long-term observation.

It would be appropriate if the primary, secondary and tertiary prevention of MI "before" and "after" high-tech medical care is integrated and improved.

The purpose of the study was to improve the prevention of MI in the Fergana Valley by studying the 21-year characteristics of its epidemiology.

**Research material and methods.** Long-term epidemiological monitoring was carried out in 2001-2021. Its object was the population of patients with MI who underwent a course of treatment in the departments of the Andijan branch of the Republican Emergency Medical Research Center (dir. prof. D.M. Khakimov). The total population was 2222, they were residents of three regions of the Fergana Valley - Namangan, Fergana and Andijan: men - 1645 (74.1%) and women - 577 (25.9%), 20-29 years old - 3 (0.1%), 30-39-year-olds - 40 (1.8%), 40-49-year-olds - 290 (13.1%), 50-59- year-olds - 713 (32.1%), 60-69-year-olds - 661 (29.7%), 70-79-year-olds - 432 (19.4%) and  $\geq 80$ -year-olds - 83 (3.7%).

Standardized and unified questionnaire, clinical, biochemical and instrumental examination methods presented in Russian (2020) and ESC (2017) and ASS/ANA (2018, 2021) clinical recommendations were used in the study [4, 7, 16]. In the diagnosis and assessment of MI, the depth and size of myocardial damage, the nature of the course of the disease, the location and stage of MI, and complications were taken into account.

Risk factors for MI (hypercholesterolemia - GXs, hyperglycemia, smoking, alcohol

consumption (AI), stress, arterial hypertension - AG, low consumption of fruits and vegetables (MSMI), hypodynamia, excess body weight - OTV and obesity) criteria of the World Health Organization defined and evaluated according to (WHO, 1999).

EXCEL for registration and calculation of statistical materials U. 8169. 82173 TMSP4 (Microsoft Company) application computer software package was used.

**Obtained results and their observation.** Epidemiological characteristics of MI have been little studied in long-term observations, no such studies have been conducted in the conditions of Uzbekistan. Based on this, an epidemiological prospective (21-year) study was carried out in the elderly population, and the epidemiological aspects of this disease were studied, and trends of significant changes in 21 years were determined. The obtained scientific results are reflected in Table 1.

It can be concluded from them that the average prevalence of MI in the observation years is 12.0%. It is confirmed by the frequency of detection in different years as follows: 2001 - 29.6%, 2010 - 15.2%, 2011 - 10.3%, 2012 - 8.9%, 2013 - 20.7%, 2014 14.6% in 2015 - 8.3%, 2016 - 9.4%, 2017 - 9.4%, 2018 - 13.6%, 2019 - 16.4%, 2020 - 10.5% and in 2021 – 7.6%.

A general characteristic trend - a statistically reliable decrease of MI in 21 years of monitoring is confirmed: the frequency of the overall detection of the disease in the research years - from 29.6% to 7.0%, that is, it is characterized by a decrease of 22.6% or 3.2 times ( $R < 0.001$ ).

The average detection frequency of Q-type myocardial infarction (MI - Q) is confirmed at the level of 70.8% in total MI. In the years of investigation, the frequency of distribution is almost unchanged (71.8% and 71.7% with detection,  $R > 0.05$ ).

Q - myocardial infarction (MI - Q you) is recorded as 29.2% of the total MI and for 21 years - from 25.4% (in 2001) to 28.3% (in 2021), i.e. 7.1 percent or 1.1 times increase is observed  $R > 0.05$ .

Research data also confirmed (table 1 and figures 1) that ST-elevation MI (MI-ST) is more common than ST-depression (MI-ST) by 14.5%. is confirmed at: 15.2% and 0.5% with a frequency of detection ( $R < 0.0001$ ).

MI – ST (+) is detected with a prevalence of 12.7% in the first examination year (2001) and 20.7% in the final examination year (2021) and/or reaching 7.5%, i.e. 1.6 times confirmed by multiplication ( $R < 0.05$ ).

2 – table

**Frequency of Q-type myocardial infarction in resident and migrant population, 21-year**

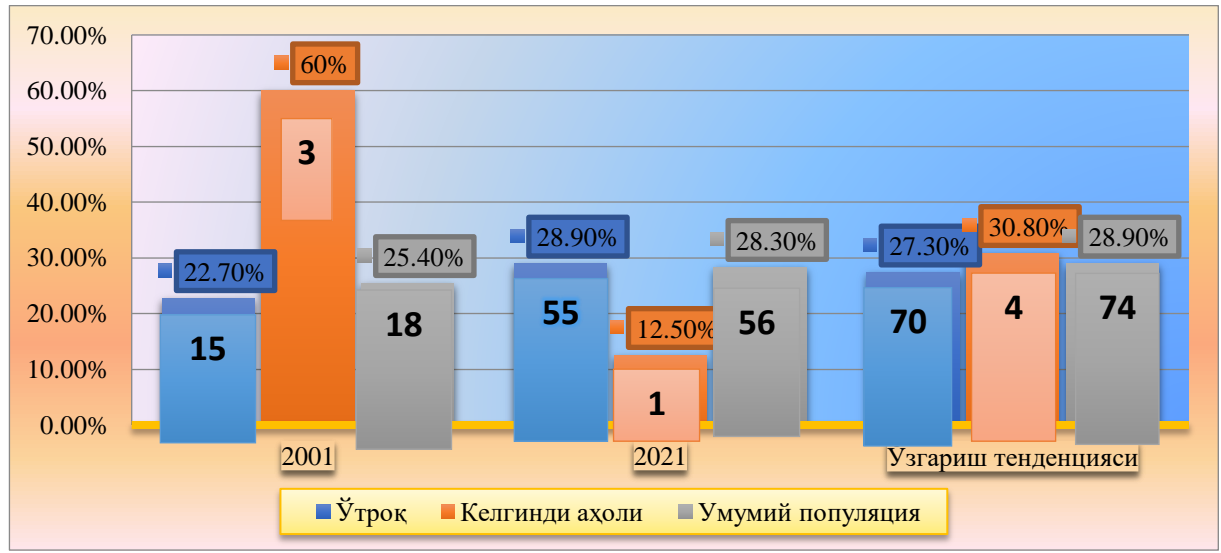
## changes

No	Inspection object	Sedentary population			New residents			N	General population	
		N	Q MI		N	Q MI			Q MI	
	Years of inspection, statistical indicator		n	%		n	%	n	%	
1	2001	66	50	75.8	5	1	20	71	51	71.8
	<b>R</b>	<0.005			<0.01			<0.05		
2	2021	190	137	72.1	8	5	63	198	142	71.7
3	2001 - 2021	256	187	71.9	61	6	31	269	193	71.7

MI – ST you the frequency of the spread is confirmed by the spread at very low frequencies in the total years of the examination. During the 21-year monitoring period, this type of MI is noted with a detection frequency of 1.4% (2001) and 0.5% (2021), that is, an increase of 0.9% ( $R < 0.05$ ).

Comparing these results to the data of foreign and local researchers, no sharp difference is observed at all: almost close or the same epidemiological characteristics are confirmed in the conditions of Andijan in relation to MI .

Table 2 and Figure 1 summarize the results of the analysis of the prevalence of Q-myocardial infarction and significant trends over 21 years in Aboriginal (settled) and non-settled (immigrant) populations.



1 – picture. Characteristics of detection of Q-MI in the resident and immigrant population of Andijan in a prospective epidemiological study

The analytical conclusion was that during the 21-year monitoring period, Q – MI is almost unchanged - 71.8% (in 2001) and 31.7% (in 2021) is recorded in the distribution frequency ( $R>0.05$ ). The average detection frequency is 71.7%.

3 – table

Epidemiology of myocardial infarction in the resident and immigrant population of Andijan and specific aspects of its 21-year evolution

No	Q you – MI of inspection, statistical indicators	Sedentary population			New residents population			P	Older population	
		N	Q is you MI		N	Q is you MI			Q is you MI	
			n	%		n	%		n	%
1	2001	66	15	22.7	5	3	60.0	71	18	25.4
	R	$> 0.05$			$< 0.0001$			$> 0.05$		
2	2021	190	55	28.9	8	1	12.5	198	56	28.3
3	2001 - 2021	256	70	27.3	13	4	30.8	269	74	27.5

According to the analysis, Q - you MI 2001 - 2021 is observed with a prevalence of 22.7% and 28.9% in the settled population. A tendency to increase by 6.2% is characteristic of the disease ( $R>0.05$ ). Overall, in 21 years of monitoring, the average prevalence of Q-you MI is

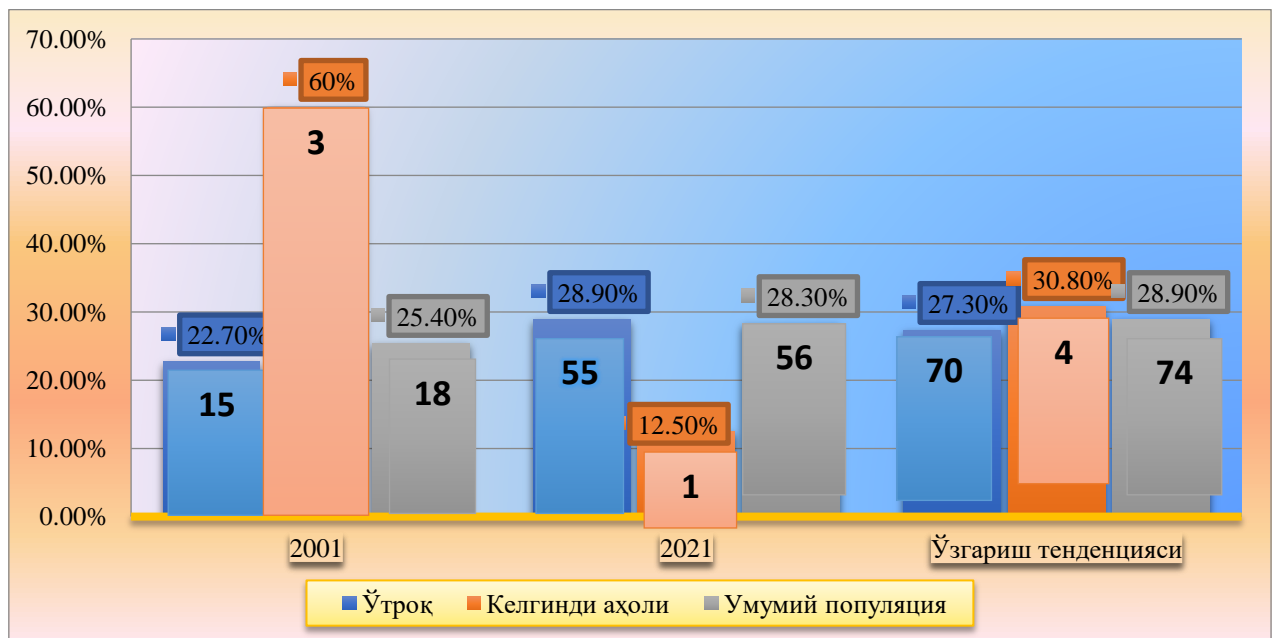
27.3% in the sedentary population. In the immigrant population, the disease is recorded with a detection frequency of 60.0% (in 2001) and 12.5% (in 2021) or is established with a decrease of 47.5%, i.e. 4.1 times, which is characteristic of the 21-year evolution. ( $R < 0.001$ ).

The average prevalence in the study years is 30.8% in this population (Table 3).

Q – you MI differs with a prevalence of 2.5% and is observed more often in the immigrant population ( $R < 0.05$ ). In general, in the years of examination, Q - you MI is confirmed in the frequency of detection with an increase from 25.4% (in 2001) to 28.3% (in 2021) ( $R > 0.05$ ). Overall, the prevalence of Q-you MI over 21 years of epidmonitoring is 27.5% on average (Table 3).

These results "point the horizon" or predict the potential for effective primary, secondary, and tertiary prevention of this type of MI as well.

The description of epidemiological indicators of myocardial infarction with ST-segment elevation (MISTkb) in resident and immigrant residents of Andijan and numerical analysis of 21-year changes are presented in table 4 and figure 2 in the appendix.



2 – picture. 21-year characteristics of epidemiologic characterization of Q-you MI in an ethnic resident and immigrant population

The prevalence of MISTkb in the elderly population of Andijan is recorded with a level

of 15.2% (on average in the years 2001-2021 in the resident population - 15.3% and in the immigrant population - from 13.1%,  $R > 0.05$ ). In the years of investigation, the frequency of the disease spread from 12.6% to 2.0% or 10.6%, that is, with a tendency to decrease by 6.3 times ( $XN = 1.16$ ;  $II = 0.55-2.47$ ;  $\chi^2 = 0.21$ ;  $P < 0.64$ ).

## 4 - table

**21-year changes in the prevalence of MISTkb in the resident and immigrant population in the population of Andijan**

No	Statistical indicators for the years of inspection	Sedentary population			New residents			P	General population	
		N	MI ST kb		N	MI ST kb			MI ST kb	
			n	%		N	%		N	%
1	2001	66	8	12.1	5	1	20.0	71	9	12.6
2	2010	149	15	10.1	2	0	0.0	151	15	9.9
3	2011	198	28	14.1	6	1	16.7	204	29	14.0
4	2012	243	36	14.8	3	0	0.0	246	36	14.6
5	2013	90	9	10.0	2	0	0.0	92	9	9.7
6	2014	144	18	12.5	0	0	0.0	144	18	12.5
7	2015	224	45	20.1	4	0	0.0	228	45	1.9
8	2016	220	34	15.5	4	1	25.0	224	35	15.6
9	2017	121	24	19.8	7	1	14.3	128	25	1.9
10	2018	126	21	16.7	6	1	16.7	132	22	1.7
	2019	190	23	12.1	5	1	20.0	195	24	12.3
11	2020	200	30	15.0	9	1	11.1	209	31	14.8
12	2021	190	39	20.5	8	1	12.5	198	40	2.0
	The trend of change	2161	330	15.3	61	8	13.1	2222	338	15.2
		$XN = 1, 16$ ; $II = 0, 55-2.47$ ; $\chi^2 = 0.21$ ; $P < 0.64$								

Note: XN – risk ratio, II – confidence interval, MI ST kb – myocardial infarction ST the type represented by the rise of the segment

The frequency of detection of MISTkb in the sedentary population is determined with an

increase from 12.1% (in 2001) to 20.5% (in 2021). "Frequency of increase" is 8.4% (  $P < 0.05$  ).

5 – table

**Epidemiology and 21-year trends of ST-segment depression MI in resident and immigrant population of Andijan**

No	Inspection period , statistical indicators	Sedentary population			New residents			P	In the general population Without MI ST	
		N	MI ST you		N	MI ST you			n	%
			n	%		n	%			
1	2001	66	1	1.5	5	0	0,0	71	1	1.4
2	2010	149	0	0.0	2	0	0,0	151	0	0.0
3	2011	198	0	0.0	6	0	0,0	204	0	0.0
4	2012	243	2	0.8	3	0	0,0	246	2	0.8
5	2013	90	1	1.1	2	0	0,0	92	1	1.1
6	2014	144	0	0.0	0	0	0,0	144	0	0.0
7	2015	224	1	0.4	4	1	25.0	228	2	0.9
8	2016	220	1	0.5	4	0	0,0	224	1	0.4
9	2017	121	0	0.0	7	0	0,0	128	0	0.0
10	2018	126	0	0.0	6	0	0,0	132	0	0.0
11	2019	190	1	0.5	5	0	0,	195	1	0.5
11	2020	200	1	0.5	9	1	11.1	209	2	1.0
12	2021	190	1	0.5	8	0	0,0	198	1	0.5
	2001 - 2021	2161	9	0.4	61	2	3.3	2222	11	0.5
<b>Statistical indicators</b>		XN = 0 , 127; II = 0 , 03-0 , 60; $\chi^2 = 9 , 86$ ; $P < 0.001$								

In the immigrant population, on the contrary, a downward trend is noted: the prevalence of MISTkb decreased from 20.0% to 12.5% during the research years, or the "downward trend" is 7.5% ( $R < 0.05$ ).

It is confirmed that myocardial infarction with ST segment depression in the general population of Andijan is recorded with an average prevalence of 0.5% during the years 2001-2021 (from 0.4% in the resident population and 3.3% in the immigrant population,  $R < 0.001$  ). Over the past 21 years, the prevalence of this type of MI has decreased from 1.4% to 0.5% (

XN=0.127; II =0.03-0.60;  $\chi^2=9.86$ ; P <0.001 ). These analyzes are presented in Table 5.

The prevalence of MIST is confirmed by the levels of 1.5% (in 2001) and 0.5% (in 2021), i.e., a tendency to decrease by 1.0% in the settled population (R<0.05). In the case of the immigrant population, these epidemiological indicators are recorded with an "increasing trend" of up to 11.1% (R<0.05).

### CONCLUSIONS

1. In a 21-year epidemiological study, the real epidemiological situation of myocardial infarction and its connection with risk factors was determined in the conditions of the Fergana Valley. The obtained results serve as an adequate source for the appropriate assessment of myocardial infarction, its risk factors and epidemiological mechanisms of origin, as well as for the development of an effective prevention algorithm.

2. In the studied population (20-44 years old, 45-59 years old, 60-74 years old,  $\geq 75$ -80 years old) during 21 years of monitoring, dynamic reduction of myocardial infarction (from 29.6% to 7.6%) is determined. Myocardial infarction is confirmed with high frequencies in 50-59 and 60-69-year-olds, aboriginal population, middle-educated people, married people, workers, people engaged in physical labor, men, Muslim population, urban population and population with occupational risk factor.

3. Traditional type of myocardial infarction - 91.5%, "hidden type" - 0.7%, MI with Qli - 37.4%, MI without Q - 21.7% are recorded in population  $\geq 20$ -80 years old. Qli MI is determined with an age-dependent increase in frequency up to 36.1% in men and 91.7% in women. Non-Q MI is confirmed with an age-dependent increase of up to 33.0% (in men – up to 60.0% and in women – up to 42.9% in frequency).

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