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STUDYING OF PREVALENCE OF THE MOST SIGNIFICANT UROLOGICAL DISEASES IN THE ARAL SEA AREA

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Introduction

Data of the researches devoted to prevalence of illnesses of genitourinary sphere, concerns only separate nosological units or, as a last resort, their groups. Researches of prevalence of urolithiasis, benign prostatic hyperplasia (BPH), urinary tract infections (UTI), carried out at various times in many countries, in some extent and scale [Apolikhin O. I et al., 2010, Kozhabekov B. S. 1998, Miller D.C., et al., 2009] relate to them. Coverage of the data on the prevalence of diseases estimated on appealability of patients for the medical aid, can be much wider, therefore objectivity of such data is relative, as appealability, in itself, depends on many factors (availability of medical aid, its quality, sanitary culture of the population, its mentality, etc.) And to present an integrated picture of true prevalence of diseases of organs of urinary ways and man's sexual sphere, not always is obviously possible.

Meanwhile, urological diseases, especially most significant of them - urolithiasis, UTI, BPH, widespread, reduce quality of life and cause disability in patients, demand the big expenses for treatment and after treatment and, as a result, turn around an essential material damage in Republic scales [Arustamov D.L. et al., 2004, Nurullaev R.B., 2005, Tarasenko B. V. et al., 2002].

For a situation assessment related to urological case rate, modern data on it, both according to the official statistical reporting, and by results of specially conducted epidemiological researches among the population is necessary.

The researches executed last years, including in Uzbekistan, have made the certain contribution to the resolution of a studied question. However, it is necessary to notice that a studying subject were only separate aforementioned nosological units and their groups [Arustamov D.L. et al., 2004].

Other not studied aspect of a surveyed problem is definition of possibilities and a share of participation of a primary link of medical aid (general practitioner) in control of urological case rate. Planned research is localized in the Aral Sea Area which is a zone of ecological catastrophe and where it is necessary to give particular attention to the state of the population health, as well as to diagnostics of early stages of diseases, by elaboration of both medical, and preventive actions that in a bigger extent is connected with the activity of a primary link of public health services.

The work purpose - an assessment of prevalence indicators of the most significant urological diseases in environmentally adverse Aral Sea Area.

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Materials and methods

Epidemiological research by cross-sectional study is carried out among the population served by rural-medical centre (RMC) "Avaz Utar" of Yangiaryk district and RMC "Uygur" of Yangibazar district of Khorezm region. In the Republic of Karakalpakstan are chosen RMC "Kirkkiz" of Ellikkala district and RMC "Cheremushka" of Nukus district. The population of the specified sites is surveyed by a continuous method.

The Republic Karakalpakstan and Khorezm region can be defined as the territories different on a complex of geographical (ecological) characteristics not only in the Republic of Uzbekistan, but also as a whole, in Central Asian region.

For research carrying out, a representative sample where persons of both sexes at the age from 1 year and older have been included has been generated. The population selected for epidemiological research represented a contingent of the countrymen, actually all life lived in the given area.

The case rate on appealability not always shows true level of diseases prevalence available for the population. It is known that a certain part of the population suffering chronic diseases, for whatever reasons do not address for medical aid though are in great need in it. In this connection to establish real prevalence of chronic diseases at the population according to appealability and current observation is often impossible. Based on this, for an assessment of true level of a case rate, in 2009 - 2011, employees of chair of urology of the Tashkent medical academy and the Republican specialized center of urology (RSCU) have organized an expedition. Together with general practitioners in the chosen sites complex medical examination of 7597 persons that has made 85,4 % of the number subject to survey has been conducted.

At distribution of the population structure on gender and age groups, for the analysis of separate urological diseases we had been used the international classification of diseases – ICD-10 (1993) (tabl 1).

Table 1. Distribution of the surveyed population on gender and age.

Sex	Male		Female		Total	
Age	n	%	n	%	n	%
1-14	867	29,3	821	17,7	1688	22,2
15-19	293	9,9	482	10,4	775	10,2
20-29	469	15,8	1118	24,1	1587	20,9
30-39	484	16,4	882	19,0	1366	18,0
40-49	345	11,7	713	15,4	1058	13,9
50-59	264	8,9	439	9,5	703	9,3
60-69	132	4,5	109	2,4	241	3,2
70-79	91	3,1	66	1,4	157	2,1
>80	15	0,5	7	0,2	22	0,3
Total	2960	39,0	4637	61,0	7597	100,0

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As it is seen on the table, the number of children, in total, has made 1688 (22,2 %), persons of youthful age - 775 (10,2 %). The overwhelming majority patients at the age from 20 till 69 years – 4955 (have made 65,2 %), over this age - 179 (2,7 %).

The universal questionnaire was applied to population inspection intended for definition of symptoms inherent to urological diseases specially developed in the Republican specialized center of urology. The questionnaire includes 33 questions concerning symptoms of the bottom urinary tract, infections of an urinary tract, an incontinence of urine, a pathology of man's sexual sphere. General practitioners of a primary link of public health services actively participated together with RSCU doctors in inspection of the population and questionnaire filling and conducted the physical survey of respondents.

Urine analyses were carried out by a quick test by using of test-strips Urine-10 («Cypress Diagnostics»). Microscopy of urine sediment was carried out when necessary.

BPH screening at men over the age of 50 was carried out using the following methods: poll of respondents on universal questionnaire, with filling of the questionnaire of the international assessment system of prostate disease symptoms; physical survey including external examination of organs of a scrotum and digital rectal examination of a prostate; ultrasonic research of kidneys, urinary ways and a prostate with an assessment of presence and volume of a residual urine, scoping of a prostate and an average flow rate of urine.

All patients, under the specified list, were invited to survey and inspection by special authorized employees of RMC. Control of the given procedure was carried out in interaction with local administration and a management of treatment-and-prophylactic establishments of the district.

Outcomes & discussion

Prevalence of the most significant urological diseases in the Aral Sea Area has made 21,34±0,47 for 100 surveyed, in Khorezm region - 21,02±0,64 cases, in Republic Karakalpakstan - 21,69±0,69 cases for 100 surveyed (tab. 2).

Table 2. Prevalence of separate urological diseases in the Aral Sea Area (on 100 surveyed)

Diseases	Khorezm region	Republic of Karakalpakistan	Average
Pre-lithiasis	5,51±0,36	6,16±0,40	5,82±0,27
Urolithiasis	1,65±0,20	1,11±0,17	1,40±0,13
UTI	10,85±0,49	10,65±0,51	10,75±0,36
BPH	3,01±0,27	3,77±0,32	3,37±0,21
Total	21,02±0,64	21,69±0,69	21,34±0,47

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The analysis of level of a true case rate of the population in the Aral Sea Area under separate nosological forms of urological diseases has shown that among the population the infection of an urinary tract (10,75±0,36) is most extended, it follows pre-lithiasis (5,82±0,27), BPH (3,37±0,21) and urolithiasis (1,40±0,13). It is necessary to notice that in one case, comparison of level of prevalence of urological diseases in Khorezm region and Republic Karakalpakstan has not taped significant territorial differences of indicators (p>0,05) (tab. 3).

Table 3. Prevalence of separate urological diseases in the Aral Sea Area depending on gender (on 100 surveyed)

	Khorezm region			Republic of Karakalpakistan			Totally		
Diseases	male	female	p	male	female	p	male	female	p
Pre-lithiasis	5,37±0,57	5,61±0,47	>0,05	7,22±0,69	5,47±0,49	<0,05	6,25±0,44	5,54±0,34	>0,05
Urolithiasis	1,87±0,34	1,51±0,25	>0,05	1,27±0,30	1,00±0,21	>0,05	1,59±0,23	1,27±0,16	>0,05
UTI	5,04±0,56	14,53±0,71	<0,001	4,03±0,52	14,91±0,76	<0,001	4,56±0,38	14,71±0,52	<0,001
BPH	7,63±0,67			9,13±0,77			8,34±0,51		
Total	20,04±1,02	21,64±0,83	>0,05	22,15±1,10	21,39±0,88	>0,05	21,05±0,75	21,52±0,60	>0,05

The analysis of level of a true case rate of the population of Khorezm region and Republic Karakalpakstan on patients' gender has shown that prevalence of urinary tract infection has appeared higher with women, than those with men. In Khorezm region women's UTI met more often 2,9 times, in Republic Karakalpakstan – 3,7 times that can be explained by anatomico-physiological features of genitourinary organs of women.

In Republic Karakalpakstan, there was above a prevalence of pre-lithiasis indicator with men - 7,22±0,69, with women it has made 5,47±0,49.

It is necessary to notice that if at the age of 1-14 the prevalence of urological diseases on 100 surveyed has made 6,87±0,62, then with persons of 80 years and older their level is made already 90,91±6,13 (tab. 4). Sharp increase of a case rate level was noticed in age group of 60-69 years. If with persons of 50-59 years, case rate level in comparison with age group of 1-14 years is enlarged in 5,6 times, at the age of 60-69 years it was enlarged more than 9 times. In Khorezm region accordingly indicators were enlarged 5,2 and 8,8 times, and in Republic Karakalpakstan - 6,3 and 9,9 times.

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Table 4. Prevalence of urological diseases in the Aral Sea Area depending on age of the surveyed (on 100 surveyed)

Age	Khorezm region	Republic of Karakalpakistan	Totally
1-14	7,52±0,85	6,00±0,89	6,87±0,62
15-19	12,50±1,58	12,54±1,81	12,52±1,19
20-29	19,73±1,40	17,01±1,35	18,40±0,97
30-39	20,11±1,52	20,30±1,55	20,20±1,09
40-49	25,69±1,88	28,63±1,99	27,13±1,37
50-59	39,29±2,66	37,87±2,53	38,55±1,84
60-69	66,02±4,67	59,42±4,18	62,24±3,12
70-79	76,83±4,66	65,33±5,50	71,34±3,61
>80	81,82±11,63	100,00±0,00	90,91±6,13
Total	21,02±0,64	21,69±0,69	21,34±0,47

Presence of salts crystals in urocheras was regarded as a sign of initial urolithiasis stage (pre-lithiasis) which precedes a possible lithogenesis (stone formation) or accompanies this process that proves to be true by researches of K. Sachideu and coworkers. [1989] and others. J. Elliot and coworkers. [1989] consider that the number and the sizes of crystals of newly emitted urine reflect a tendency to a lithogenesis and consider crystalluria as a microurolithiasis. By scientific researches it is proved that in this disease stage the preventive actions are most expedient and efficient, allowing preventing the subsequent processes of stone formation [Rakhmanov D.K., 1999, Tarasenko B. V, 1991, Yuldashov F, 1998, Silva J.A.M. et al. 2002, Tiselius H.G., 2000]. Further, in 20-40% of cases if not to carry out preventive maintenance, the crystalluria comes to the end with concrement formation [Baumann J.M. et al. 2003]. Thus the patients with pre-lithiasis and microurolithiasis require special attention, more steadfast, than the patient with ICD.

Pre-lithiasis diagnosed at detection of salts echo-patterns, according to renal ultrasonography and at presence of crystals at the microscopy of urine sediment.

In age groups of 15-19 and 20-29 years, pre-lithiasis level in comparison with age of 1-14 years increased, accordingly, in 4,3 and 5,8 times. Its highest level was observed with patients of 40-49 years (10,40±0,94). At this age the highest indicators of urolithiasis case rate (2,74±0,50) were also observed. Growth of a case rate by urinary tract infections, was observed with age, reaching the peak by 70-79 years (26,11±3,51) (tab. 5). Also turns an attention on itself that with persons of over 70 years old the stones of urinary system organs practically were not observed.

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Table 5. Prevalence of separate urological diseases in the Aral Sea Area in various age groups (on 100 surveyed)

Age (years)	Pre-lithiasis	urolithiasis	UTI
1-14	0,95±0,24	0,12±0,08	5,81±0,57
15-19	4,13±0,71	1,03±0,36	7,35±0,94
20-29	5,48±0,57	1,13±0,27	11,78±0,81
30-39	7,03±0,69	1,98±0,38	11,20±0,85
40-49	10,40±0,94	2,74±0,50	13,99±1,07
50-59	10,10±1,14	2,70±0,61	12,66±1,25
60-69	8,71±1,82	0,71±0,41	16,18±2,37
70-79	4,46±1,65	-	26,11±3,51
>80	9,09±6,13	-	22,73±8,93
Total	5,82±0,27	1,40±0,13	10,75±0,36

At including of outcomes of patients' inspection and treatment in the analysis group were guided by so-called criteria of "standard BPH patient » [Chatelian Ch. et al, 2001]. As the basis the clinical data testifying to presence at patients of benign prostate enlargement and bladder outlet obstuction caused by it has served for this purpose. Patients with bladder outlet obstruction, which was not connected with BPH, the general diseases influencing function of the bottom urinary tract, as well as earlier operated due to BPH have been excluded from research.

For studying prevalence of BPH, 489 men at the age of 50 years and older have been surveyed, which, depending on age, have been divided into groups – 50-59, 60-69, 70-79 and 80 years and older (tab. 6).

Table 6. Prevalence of BPH signs in the Aral Sea Area (for 100 surveyed)

Age (years)	Number of men surveyed	Prostate volume over 30ml (%)	Average urine flow rate < 10ml/sec (%)	Residual urine volume (%)
50-59	263	35,0±2,9	24,3±2,6	7,6±1,6
60-69	129	65,9±4,2	55,8±4,4	28,7±4,0
70-79	83	71,1±5,0	69,9±5,0	49,4±5,5
Over 80	14	85,7±9,4	92,9±6,9	92,9±6,9
Total	489	50,7±2,3	42,3±2,2	22,7±1,9

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Volume of a prostate (V) is marked out as a basic sign of its benign hyperplasia. It is considered reliable and objective marker for BPH though its size not always correlates with degree of expression of symptoms of the bottom urinary tract and other signs of disease.

According to the standard data on standard value of volume of a prostate, in our researches we considered its enlarged if the gland volume exceeded 30,0 ml. Prevalence of this sign has made 50,7±2,3. With the years the prostate volume was enlarged that corresponds to the data specified in the world literature.

The average flow rate of urine was defined by division of volume of emitted urine for the period of urination. In order to obtain the authentic results, it is considered to be that in a bladder not less than 150,0 ml of urine, initially, should contain. Results of the conducted research have shown that almost at half (42,3±2,2) the surveyed men rate of an urination has appeared below 10 ml/sec.

Except the specified widespread urological diseases during epidemiological research, other urological pathology was observed: anomalies of development of genitourinary system, varicocele, kidneys cysts, stressful urine incontinence, sterility, enuresis etc. As a whole, accompanying, most significant diseases have been observed at 914 inhabitants (12,0±0,4). All of them have received corresponding references for more profound inspection and treatment at the expert in a residence or in specialized clinics.

Conclusion

Definition of objective indicators values of prevalence of urological diseases becomes possible at revealing of the latent urological pathology. For the solution of this problem the purposeful epidemiological inspection of the big sample of the population of certain region would be more informative.

Essential value in carrying out of epidemiological inspection has attraction to its performance of a primary link of public health services (general practitioners), as the most approached and having possibility of implementation of early diagnostics of urological diseases The prime attention thus should be given to obligatory annual preventive medical inspection and ultrasonic research of organs of urinary ways, with the subsequent prophylactic medical examination of urological patients.

Application of specially developed universal questionnaire at epidemiological inspection of the population of Sub-Aral area has allowed defining the indicators of prevalence and improving early diagnostics of the most widespread urological diseases (UTI, urolithiasis, pre-lithiasis and BPH).

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