Prevalence and Epidemiology of Kidneys Cancer in Bukhara Region

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ABSTRACT

The main contingent of patients with malignant neoplasms in the Republic of Uzbekistan (in total 73,4%), who were registered in the dispensary in 2021, was formed from patients with malignant neoplasms of the kidney and accounted for 3,2%. By regions, this indicator varied from 51,6% in the Bukhara region. This review is dedicated to the topic of malignant tumors of the kidneys, to the study of prevalence and epidemiology in the Bukhara region.

Keywords: Kidney, Malignant Tumor, Epidemiology, Region.

Kidney cancer consists of renal cell cancer (RCC) accounting for over 90 % of all kidney carcinomas and the transitional cell cancer. Clear cell cancer is a predominant type (80–85 %) of RCC. Smoking, overweight, obesity, hypertension, occupational exposures to pesticides, specifically to trichloroethylene are considered causal risk factors for sporadic i.e. non-hereditary RCC. The majority of sporadic RCC have polygenic etiology. They develop as a result of combined effect of large number of low penetrance genetic susceptibility genes (genetic polymorphism). The interplay of exposures to environmental risk factors and genetic susceptibility of exposed individuals is believed to influence the risk of developing sporadic RCC. Inheritance of high penetrance genes is associated with very high risk of the RCC. To these genes belongs, for example, VHL (von Hippel–Lindau). Germline mutations in VHL are causing VHL syndrome and hereditary type of RCC. Risk of RCC in individuals with germ-line mutations is very high however the proportion RCC associated with these events is very low (>5–7 %). Environmental factors virtually do not influence the risk of these cancers. The studies in molecular epidemiology based on candidate gene approach have shown that certain types (variants) of polymorphisms of GST, MTHFR, TYMS, VHL genes are associated with RCC. The genome wide association studies identified over twenty locus with single nucleotide polymorphism affecting the risk of RCC. The risk loci so far identified for RCC account for only about 10 % of the familial risk of RCC. Thus more studies with larger sample size are needed. As more RCC susceptibility alleles are discovered, deciphering the biological basis of risk variants should provide new insights into the biology of RCC that may lead to new approaches to prevention, early detection and therapeutic intervention [D.G. Zaridze, A.F. Mukeriya, O.V. Shan'gina, V.B. Matveev, 2018].

The incidence of renal cell carcinoma depends on age and reaches a maximum by the age of 70. Men suffer from this pathology twice as often as women. To date, it has been proven that tobacco smoking is one of the most significant risk factors for the development of various malignant neoplasms. The risk of developing a kidney tumor in smokers of both sex groups increases from 30% to 60% compared to non-smokers. Stopping smoking

reduces the risk of developing the disease. According to a number of international cohort studies, within 25 years after quitting smoking, the risk of kidney cancer is reduced by 15%. Most studies have confirmed the adverse effect of excessive body weight on the likelihood of developing kidney cancer. Obesity leads to a 20% increase in the incidence of renal cell carcinoma. Weight fluctuations, as well as a significant increase in body weight in adults, are independent risk factors for the development of this pathology. The mechanism of the influence of obesity on the development of kidney cancer is still not clear. Perhaps this is due to an increase in the concentration of endogenous estrogens and / or with the biological activity of insulin-like growth factors. Several epidemiological studies have noted an increase in the risk of developing kidney cancer in patients with arterial hypertension by 20%. It remains an open question whether the cause of the development of renal cell carcinoma is hypertension itself or the development of the tumor is potentiated by the use of various antihypertensive drugs. Many authors attribute the appearance of renal cell carcinoma to the use of diuretic drugs. The risk of developing this pathology in patients treated with diuretics for various indications is more than 30%. Amphetamine-containing drugs have been found to greatly increase the risk of developing kidney cancer. There are few reports in the literature that the use of phenacetin-containing analgesics increases the likelihood of developing a kidney tumor. In large epidemiological studies, there was no significant increase in the incidence of kidney cancer in patients with urolithiasis and patients with kidney cysts. An increased risk of developing renal cell carcinoma in end-stage chronic renal failure has been noted. A number of studies have noted an increase in the incidence of renal cell carcinoma in patients with diabetes mellitus. However, mortality rates from kidney cancer in this group are similar to those in the population. The close relationship between diabetes mellitus, obesity, and hypertension makes it difficult to assess the true impact of each of these diseases on the incidence of kidney tumors. The potential pathogenetic significance of hormonal factors in the development of kidney cancer has been proven in animal models. In healthy and malignant kidney tissues of animal models, sex hormone receptors have been identified. Data have been obtained on the possibility of developing estrogen-induced adenoma and renal carcinoma in ferrets. In epidemiological studies, a correlation has been noted in the incidence of kidney cancer with the consumption of meat, plant products, as well as margarine and butter. However, a significant effect of specific foods on the incidence of renal cell carcinoma has not been identified. It is possible that not the original products themselves are of pathogenetic significance, but the substances released during cooking. Pyrolysis components, in particular, heterocyclic amines, produced during high-temperature processing of meat, have a proven carcinogenic effect. The consumption of vegetables and fruits, according to most authors, helps to reduce the risk of developing kidney cancer. The influence of alcohol, coffee and tea consumption on the incidence of kidney tumors has not been studied. Renal cell carcinoma is not an occupational disease. However, data have been published on an increased risk of developing this pathology in people employed in weaving, rubber-rubber, paper production, who have contact with industrial dyes, oil and its derivatives, industrial pesticides and salts of heavy metals. [N.V. Jukov, 2022].

According to Professor M.N. Tillyashaykhova, in the Republic of Uzbekistan at the end of 2021, 113168 (in 2020 - 107196) patients were registered in oncological institutions, i.e. 0.3% of the country's population. In 2021, 45111 (39,9%) patients with MN were registered in the dispensary for 5 years or more (in 2020 - 39.4%). By regions, this indicator varied from 18.9% in the Republic of Karakalpakstan to 51,6% in the Bukhara region. The largest proportion (total 77,2%) is the weight of patients observed for 5 years or more, was observed in patients diagnosed with kidneys cancer (3,2%)

Information about the contingent of patients with malignant neoplasms of the kidneys registered in oncological institutions of the Bukhara region in 2021

Abs.number of detected cases	Per 100,000 population	Actively detected (%)	Diagnosis confirmed morphologically (%)	1-year mortality (%)
44	2,3	0,0	77,3	18,8

Distribution by disease stages (%)

I	II	III	IV	Registered at the end of the year (total)		
				Absolute number	Per 100,000 population	Of which 5 years or more (%)
15,9	36,4	15,9	31,8	389	20,0	58,4

Information about patients who died from malignant neoplasms of the kidneys in the Bukhara region in 2021

Absolute number	men	women	Total	Rate per 100,000 population.
	10	7	17	0,9

Oncological incidence of the kidneys of the population of the Republic of Uzbekistan for 2015-2021. (per 100,000 population)

	Years						
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Total MN	1,9	1,9	2,1	2,2	2,4	1,9	1,8

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