ANALYSIS OF THE MAIN STATISTICAL INDICANTS FOR KIDNEY CANCER IN UZBEKISTAN.

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ABSTRACT

Kidney carcinomas that primarily affect adults include malignant tumors that emerge from kidney parenchyma and kidney pelvis. Almost all the malignant tumors arising from the renal pelvis are classified as transitional cell carcinomas, while less than 10% of them are considered to be microscopically verified renal carcinomas.

Since adenocarcinomas occur mainly from the renal parenchyma the name of this disease is renal cell carcinoma and it constitutes more than 90% of kidney carcinomas. Most cases of kidney cancer in children are nephroblastomas (Wilms' tumor), accounting for about 1.1% of all cases of kidney cancer, but this pathology is not the focus of the current review.

The histological type of the majority of renal cell carcinomas are the clear cell type, followed by papillary and chromophobic types. Although histological subtypes of renal cell carcinoma may differ in clinical characteristics and genetic determinants, epidemiological data on the renal cell carcinoma subtype in Uzbekistan are insufficient to reveal consistent patterns.

Keywords: Epidemiology, kidney cancer, tumor, statistics.

In 2019, in the Republic of Uzbekistan, it was detected 24,648 cases of malignant neoplasms in which 10,511 male and 14,137 female patients that have been diagnosed with the cancer for the first time in life. The increase in this figure compared to 2018 was 5.4%. The incidence rate of malignant tumors per 100,000 individuals in the Republic of Uzbekistan was 74.1, which is 5.4% higher than in 2018 and 29.7% higher than in 2009 (for the calculation it was used data from the State Statistics Committee of the Republic of Uzbekistan on the average annual population by region for 2019). By the end of 2019, the number of patients was 103,063 (in 2018 96,575), i.e. 0.3% of the country's population, 59,397 of them were rural residents (57.6%), the number of the children under 18 years old was 4,151 (4.0%).

Kidney cancer ranks 9th in the structure of cancer incidence, with an incidence rate of 2.3 per 100,000 individuals. (Diagram 1)

However, in the structure of cancer incidence, kidney cancer ranks as the seventh most common form of neoplasms in men with the incidence rate of 2.6 per 100,000 individuals, following brain, liver, prostate, lungs and stomach cancer (Diagram 2).

Diagram No. 2. The structure of cancer incidence among the female and male population in 2019

In 2019 the patients with kidney carcinomas accounted for 3.2% of the total number of patients with neoplasms registered in the Republic (Diagram 3).

Diagram No. 3. The share (%) of patients with malignant tumors registered in the Republic of Uzbekistan in 2019
The number of patients that had been followed up for 5 years or more was 40,613 patients or 39.4% (in 2018 - 39.0%) of all patients with malignant tumors. At the same time, the share of patients with kidney tumors that had been followed up for 5 years or more from the moment of diagnosis was 39.6% in 2010, 40.7% in 2015 and 37.1% in 2019 of the total number of those registered with this diagnosis.

(Diagram 4).

Diagram No. 4. Dynamics of 5-year survival of patients with kidney cancer over 10 years.

The epidemiology of kidney cancer in Uzbekistan correlates with the data that are typical for global statistics and, even, considerably lower than similar indicators found, for example, in the United States. According to GLOBOCAN for 2018, approximately 403,000 individuals were diagnosed with kidney cancer, which is 2.2% of all confirmed malignant tumors [1]. Of these, 254,500 cases were diagnosed in males and 148,800 in females, reflecting a relative risk of approximately 1.7 for men compared to women. Perhaps this is due to the low availability of medical control in general and the impossibility of wide coverage with diagnostic measures for a large number of people in particular. However, there is a tendency of low incidence of detection of renal neoplasms in developing countries and, conversely, high rates of detection of this pathology in industrialized countries.

According to the statistics provided by SEER, about 74,000 of the new cases of kidney cancer were diagnosed in the United States in 2019, accounted for 4.2% of all neoplasms detected (almost double the global average). The incidence of this pathology in 1975 was 7.1 / 100,000, in 2016 this figure was already 14.9 per 100,000
individuals. This steady growth has made kidney cancer one of the fastest growing cancer diagnoses in the United States. However, after reaching a peak of 16.0 per 100,000 individuals in 2008, the incidence of kidney cancer has stabilized [3].

The incidence of kidney cancer in the Republic of Uzbekistan is also growing and in 2019 it amounted to 2.4 per 100,000 individuals, in 2010-2011 the figure was 1.6, in 2015-2016 this figure was 1.9, and in 2018 - 2.2 (Diagram 5)

Diagram 5. Dynamics of the incidence rate of kidney cancer over 10 years.

Moreover, the proportion of patients with kidney cancer for the first time in life which was morphologically confirmed has increased. In 2015, this figure was 89.6%, in 2016 - 87.8%, in 2017 - 84.0%, in 2018 - 91.3%, and in 2019 - 92.6%.

Diagram 6. The proportion of patients with a diagnosis of renal cancer, confirmed morphologically over the course of 10 years.

The proportion of patients with kidney cancer diagnosed at the early stages of carcinogenesis is steadily increasing, while the number of advanced cases of this disease (stage IV) is decreasing (Fig. 1).
Fig. 1. The proportion of patients with kidney cancer in Uzbekistan at the stages I-IV from the number of patients diagnosed for the first time in 2015-2019, %.

Thus, in 2015 there were approximately the same number of patients with the stages I-II and III of the tumor at 40.6% and 40.9%, respectively, then by 2019 the proportion of patients in whom kidney cancer was verified at the early stages increased to 60.4%, and advanced cases were determined in 23.8% and 12.3% patients with II and IV stages of the disease, respectively.

Mortality of patients from kidney cancer in Uzbekistan in 2015-2019 stayed at the same level. In 2015, 301 patients died of this disease, which amounted to 0.7% of the total number of patients with a verified diagnosis of kidney cancer, in 2016 this figure was 302 patients (0.9%), in 2017 - 287 patients (0.9%), in 2018 - 349 patients (1.1%), in 2019 - 312 patients (0.9%). The mortality rate of patients with kidney cancer during the year since the diagnosis of a malignant neoplasm (from the number of patients first registered in the previous year) in Uzbekistan in 2015 was 0.4%, in 2016 - 0.5%, in 2017 - 0.5%, in 2018 - 0.6%, in 2019 - 0.5%.

In other countries, the mortality rate from kidney cancer remains high. With a relative five-year survival rate in the United States of 76% (2009–2015), renal cell carcinoma is the most life-threatening urologic condition. At the same time, the survival rate strongly depends on the stage the disease: the 5-year relative survival rate is 93% for stage I, 72.5% for stage II / III and only 12% for metastatic lesions at stage IV. About one third of cases are diagnosed as metastatic cancer and another 20-50% might progress to metastatic cancer despite surgical treatment [4]. A large retrospective study of seven countries in Latin America and Spain showed that the 5-year survival rate after resection of renal cell carcinoma was 86.1%. Age, lymph node metastases, performance status (Karnovsky score <80), fat invasion, tumor necrosis, and tumor size (> 7 cm) were all significantly associated with worsening survival (in descending order of importance) [5].

Thus, the improvement of the diagnostic methods of kidney cancer for the early detection, a wide range of people from risk groups for preventive examination, educational training programs for primary care physicians and educational work among the population aimed at prevention of urological diseases undoubtedly increases the effectiveness of the treatment of renal cell carcinoma at the initial stages of the development of carcinogenesis.

Sporadic renal cell carcinoma is a disease of the elderly. The median age at diagnosis is 64 in the United States, although most patients are diagnosed between the ages of 65 and 74. In patients with concomitant diseases such as Hippel-Lindau disease, kidney cancer develops at the age of 40–48 years, and they are much more often diagnosed with bilateral kidney cancer [6]. In recent decades the largest increase in the incidence was noted among people at the age of 75 and older in the United States. Papillary renal cell carcinoma was much more
common in people over 60 years old, while the chromophobic type of the disease, apparently, is not associated with age, as there are different mechanisms and timing for pathogenesis of histological subtypes [7].

In Uzbekistan, the mean age of men at the diagnosis of renal cell carcinoma is 59.0 ± 2.23, of women 52.0 ± 1.18. The age group 51-70 years old accounts for 80% of male patients and 79.2% of women.

There are many risk factors for kidney cancer including bad habits (cigarette smoking, alcohol, unhealthy lifestyle leading to obesity) and previous diseases. Our studies have shown that in Uzbekistan, renal cell carcinoma is characterized by concomitant diseases, such as varicose veins of the lower extremities, hypertension, diabetes mellitus, postinfarction cardiosclerosis, hepatitis B and anemia. Studies conducted in the United States also refer to antecedent diseases as significant risk factors for the development of kidney cancer. Thus, the observation has shown that arterial hypertension doubles the overall risk of renal cell carcinoma. White Americans with hypertension had a risk of 1.9 and African Americans 2.8 (possibly due to an increased prevalence of obesity) [8]. And a study conducted by the EPIC group in Europe has demonstrated that among Europeans, high systolic (> 160 mmHg) and diastolic (> 100 mmHg) blood pressure were associated with a risk score of 2.48 and 2.34 for development of renal cell carcinoma, respectively [9].

The treatment strategy for kidney cancer is altering, thus the emergence of a new generation of immunotherapeutic agents and combined treatment regimens has significantly enhanced the treatment not only the initial, but also advanced stages of this disease. The share of the combined and complex treatment method in 2019 in Uzbekistan amounted to 46.1% (in 2015 54.2%), the share of the surgical method continues to grow, amounting to 22.4% (in 2015 - 13.3%), the use of only the radiation method decreased to 3.6% (in 2015 - 7.6%), and the share of the drug method alone has been growing over the years, amounting to 27.9% (in 2015 - 24.9%).

There is the highest rate of using the surgical method as a single type of treatment for kidney cancer (47.2%) (Diag 7). This type of therapy remains prevalent in this disease, which is demonstrated in studies performed not only in Uzbekistan, but also in other countries.

Diagram 7. The comparison of the share of the specialized treatment of all the malignant neoplasms and renal carcinomas in 2019

Renal resection remains a predictor of increased survival regardless of the number of metastatic lesions (P <0.001) and for patients with synchronous (P <0.001) and asynchronous (P = 0.002) disease. In a Southwest Oncology Group study of 246 patients who had metastatic renal cell carcinoma and were treated with interferon-α, the addition of cytoreductive nephrectomy improved overall survival from 8 to 11 months. The same results were obtained in a European study reported by the European Organization for Research and Treatment of Cancer (EORTC). In this study, the use of nephrectomy more than doubled median survival from 7 to 17 months in a group of 83 patients [10].
Conclusion. Kidney cancer in Uzbekistan ranks 8th of all detected oncopathologies, and the proportion of patients with this disease is steadily increasing. Improvement of oncological care, modernization of the diagnostic procedures in specialized oncological clinics, and an increase in the dispensary examination coverage of the population made it possible to significantly reduce the proportion of patients with advanced stages of carcinogenesis by 2019. Currently, in Uzbekistan, the proportion of only surgical treatment of renal cell carcinoma is decreasing, and the ideal candidates for such an intervention are thought to be patients with an appropriate performance status, no symptoms or mild symptoms of the disease, and with a low metastatic burden outside the primary tumor.

REFERENCES: