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ABSTRACT

of a dissertation submitted for the degree
of Doctor of Medical Sciences

**COMPARATIVE ANALYSIS OF POSSIBILITIES OF
COMPLEX EXAMINATION METHODS IN EARLY
DIAGNOSIS OF KIDNEY AND BLADDER CANCER,
DETERMINATION OF INVASION DEGREE, CHOICE
OF RADICAL TREATMENT TACTICS**

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GENERAL CHARACTERISTICS OF THE WORK

The urgency of the problem and degree of processing. Although kidney and bladder cancer being one of the most general oncological diseases, comes after prostate cancer among tumors of the urogenital system, it has been significantly increased in recent years, ahead of prostate cancer for number of deaths¹.

According to the data of the World Health Organization, kidney and bladder cancer accounts for 2-5% of all oncological diseases and are 4-7 times more common among men than women. According to the results of the researches conducted in the former Soviet Union, every year 16,000 people in Russia and more than 200,000 people in the world are diagnosed with kidney cancer². And 75-80% of these are transparent cell carcinomas, 5-10% are papillary carcinomas, 5% are chromaffin carcinomas, and 5% are renal carcinomas developing from connective tissue³.

According to the data from other sources, every year more than 100,000 people in the world are diagnosed with urinary bladder tumour, 80% of which are men⁴. It has been confirmed by researches of many scientists that 98% of bladder neoplasms develop from epithelial tissue⁵. 90% of these are transitional cell carcinomas and 5-

¹ Tseng, C. Benign prostatic hyperplasia is a significant risk factor for bladder cancer in diabetic patients: a population-based cohort study using the National Health Insurance in Taiwan // *BMC Cancer*, – 2013, v.13, – p.7-10.

² Sobin, L. TNM classification of malignant tumors / In: UICC International Union Against Cancer. 7th edn. Wiley-Blackwell, – 2009, – p.255-257.

³ Океанов, А.Е. Статистика онкологических заболеваний в Республике Беларусь (2004-2013) / Под ред. О.Г.Суконко / А.Е.Океанов, П.И.Моисеев, Л.Ф.Левин. – Минск: РНПЦ ОМР им. Н.Н.Александрова, – 2014, – 177 с.

⁴ Goto, H. Surgical resection and inferior vena cava reconstruction for treatment of the malignant tumor: technical success and outcomes/ H.Goto, M.Hashimoto, D.Akamatsu // *Ann Vasc Dis.*, – 2014. v.7 (2), – pp.120-126.

⁵ Sievert, K. Economic aspects of bladder cancer: what are the benefits and costs? / K.Sievert, B.Amend, U.Nagele et al. // *World, J Urol*, – 2009. v.27, – p.295-300.

8 % are squamous cell carcinoma⁶. As noted above, although, there has been a significant increase in the incidence of the pathology in question in recent years, early diagnosis, determination of the degree of invasion, and the choice of radical treatment are not so high levelly.

Therefore, the diagnosis of the mentioned pathology and determination of the degree of invasion remain one of the most pressing issues for onco-urologists. For this reason, there is a great need for scientific researches in this area. The urgency of the research is determined by a number of clinical and histological features of kidney and bladder cancer. The first of them is the late development of the disease, the less and non-specific clinical symptoms, the large number of local lesions and the high probability of recurrence. In this regard, early diagnosis of this nosological form, the degree of local spread of the primary tumor, the choice of surgical treatment tactics and the prevention of minimal complications remain unresolved⁷. In general, there are many screening methods for early diagnosis of kidney and bladder cancer. However, it is not possible to apply all these to one patient. Thus, the fact that some examinations are invasive and cause various complications, while others are economically expensive, significantly limits their practical application. The success of the treatment depends on the initial diagnosis. Every mistake made in the initial diagnosis has a negative impact on treatment tactics. The most important of these is the incorrect assessment of the location and number of primary tumors, the thickness of the foot, the degree of local spread of the process, the presence of micrometastases in the

⁶ Babjuk, M. European Association of Urology. EAU guidelines on non-muscle-invasive urothelial carcinoma of the bladder: update 2013/ M. Babjuk, M.Burger, R.Zigeuner, et al. // Eur. Urol., – 2013. v.64, – p.639-665.

⁷ Gray, P.J. Receipt of aggressive therapies for muscle-invasive bladder cancer: results from the National Cancer Data Base / P.J.Gray, S.A.Fedewa, W.U.Shipley, et al. // J Clin Oncol. – 2012. 30, – p.272.

surrounding tissues and neighboring organs⁸. Most patients are diagnosed 1-3 years after the onset of the first clinical symptoms, when they already have serious changes in the kidneys, bladder and surrounding tissues. This reduces the importance of effective treatment by 35-45% by influencing the tactics of treatment⁹. Therefore, the earlier the initial diagnosis, the higher the effect of treatment¹⁰. The main treatment of kidney and bladder cancer is currently considered to be a surgical method. Although conservative adjuvant therapies, chemotherapy, hormonal, and immunotherapy are considered less important in the treatment of the disease, they help to prolong the survival of patients and improve the local process in 10% of cases in the late T3-T4 stages and infiltration of surrounding tissues and neighboring organs¹¹.

The main goal in the treatment of kidney and bladder cancer was to choose the type of radical treatment by determining the location, size, direction of development, degree of invasion of the tumor using important examination methods, and to solve problem in which cases to remove and store the organ. Whereas in the past the main task of physicians in this field was to detect the tumor using existing examination methods and thus remove the organ, but now the discovery of new diagnostic methods has radically changed these views. Cystectomy is a radical treatment, no matter how severe and traumatic for the body in the T3-T4 stages that invade the urinary wall. However, due to the large number of complications that may occur after the operation, most specialists are reluctant to perform

⁸ Reardon, Z.D. Trends in the use of perioperative chemotherapy for localized and locally advanced muscle-invasive bladder cancer: a sing of changing tides / Z.D.Reardon, S.G.Patel, H.B.Zaid, et al. // *Eur Urol.* – 2015. 67, – pp.165-170.

⁹ İmamverdiyev, S.B. Sidik kisəsi xərcənginin müalicəsi məqsədilə aparılan rezeksiyanın nəticələri/ S.B.İmamverdiyev, R.N.Nağıyev, E.C.Qasımov // *Azərbaycan Tibb Jurnalı*, – Bakı: – 2011. № 4, – с.48-54.

¹⁰ Аляев, Ю.Г. Органосохраняющие операции при опухолях почки / Ю.Г.Аляев, П.В.Глыбочко, – Москва: ГЭОТАР-Медиа, – 2009, – 272 с.

¹¹ Wang, H. Renal cell carcinoma: diusionweighted MR imaging for subtype differentiation at 3.0/ H.Wang, L.Cheng, X.Zhang, D.Wang, A.Guo, Y.Gao, H.Ye // *Radiology* – 2010. 257, – pp.135-43.

this operation. The discovery of new modern examination methods has made it possible to diagnose some patients at an early stage of T1-T2 using these methods, and organ-saving operations are considered more important in this group of patients. The most unpleasant case after organ-saving surgery for bladder cancer was the occurrence of 40-70% recurrence. Organ-saving surgery is performed in the form of resection of the urinary wall (open and closed), electroresection, ureterosistoneostomy in different variants, depending on the location, number and degree of invasion of the tumor. Many domestic and foreign authors have noted in their articles that transurethral resection in the superficial form of bladder cancer is the gold standard .

Although the surgical operation is less traumatic for the body, the most unpleasant case after the operation was the high frequency of relapses. The high incidence of relapses in the early periods after Transurethral resection operation was due to the lack of radical removal of the tumor during surgery, the lack of experience of the surgeon performing the operation, and the overlooking of small tumors.

In the past, radical nephrectomy, which improved the quality of life of patients, has long been considered the “gold standard” for kidney cancer¹². The discovery of new diagnostic methods has led to an increase in the number of indications for organ-saving operations, and thus caused the formation of expert opinions in this area. The recent rapid development of new diagnostic methods has allowed the development of new technologies of radiation examination and the opening of new horizons in the consistent use of these methods.

At the same time, different approaches to the application of diagnostic methods are noteworthy. The sequence of examinations related to the stage of cancer development has become a serious problem of diagnostic importance. It is known that patients with

¹² Karakiewicz, P. Prediction of progression-free survival rates after bevacizumab plus interferon versus interferon alone in patients with metastatic renal cell carcinoma: comparison of a nomogram to the motzer criteria/ P.Karakiewicz, M.Sun, J.Bellmunt, et al. // Eur Urol., – 2011. v.60, – pp.48-56.

suspected symptoms of kidney or urinary tract cancer go to various medical institutions and doctors. Examinations performed on the advice of a physician, such as ultrasound, computed tomography (CT), or magnetic resonance imaging (MRI), which are widely used in modern times, can reliably determine surgical tactics in which cases are appropriate. Experience has shown that CT is widely used in practice, and when the results are interpreted, it becomes clear that it would be possible to determine the tactics of treatment cheaper and without exposing the patient to any radiation. By the way, it should be noted that the CT examination exposes the patient to 20-40 mSv radiation during a common examination, which he receives in 1-5 years of normal life. In the general examination of the kidneys and urinary tract, the radiation is 10 mSv, while in the contrast CT of the abdominal cavity, this figure is 40-45 mSv.

Thus, it is clear that there is a great need to clarify the instructions for the application of any examination. Which examination or combination of examinations can provide reliable information on the stage of renal or urinary tumors, and the treatment tactics should be clarified so that additional financially and physically harmful examinations not to be applied to the patient.

Azerbaijani, Russian and English language works were used in writing the research work. These include monographs, articles in medical journals, conference materials, dissertations, abstract and internet resources. It should be noted that the first chapter, entitled "Literary Review" provides a comprehensive description of research works, so the analyses of the literature is not allowed in order not to increase the volume of dissertation work and to avoid duplication.

The object and subject of the research. 320 Patients with kidney and bladder cancer.

Purpose of the research. The purpose of our research work is to clarify the indications for the use of non-invasive, invasive, inexpensive, expensive examination methods or their combinations in relation to the developmental stages of kidney and bladder tumors and to try to clarify how credible our approach is.

The main objectives of the research. Given the relevance of the

topic of the dissertation, the following provisions were submitted:

1. To determine the most effective modern radiologic examination methods for patients using them in the diagnosis of kidney and bladder cancer, in determining the degree of invasion and in choosing the type of radical treatment;

2. To determine the most optimal and informative examination by comparing the capabilities of US, CT and MRI examinations in determining the degree of invasion of kidney and bladder cancer in our observation;

3. To determine the most convenient and cost-effective examination methods for patients among radiation methods in determining the size, number, location and degree of invasion of renal and urinary tumors;

4. To confirm that US is a routine and non-invasive examination for all patients in our care, an initial and in some cases decisive examination;

5. To determine whether it is important to apply complexly modern radiation (CT, MRI, US) methods in order to identify micrometastases in the surrounding tissues and adjacent organs in the late stages of the disease in the selection of type of radical treatment;

6. To confirm that transrectal US is irreplaceable in the detection of tumors in the anterior wall and in the apex of the bladder;

7. To study the role of US in determining the direction of development of the tumor (extrarenal, intrarenal and mixed) and enlarged lymph nodes, which is crucial in determining the type of organ-saving surgery in renal tumors;

8. To evaluate the capabilities of US as a non-invasive examination for patients in determining the quality of life of patients after surgery, monitoring the course of the disease, the detection of changes in surrounding tissues and regional lymph nodes;

9. In order to prevent recurrence after organ-saving surgery performed for bladder cancer, to apply endovesical chemotherapy in the method developed in our clinic and to use the capabilities of US in monitoring its results.

The methods of the research. The main examination method in

this research are transabdominal, transrectal ultrasound, cystoscopy, computed tomography, magnetic resonance imaging.

The main provisions of the dissertation to be defended:

- Among the modern radiological methods for the initial diagnosis of kidney and bladder cancer, the most optimal and cost-effective method for patients is transabdominal US performed from the front of the abdomen;

- Kidney cancer in the stage of T1-T2 and in the surface of the bladder with the stages Ta-T1, in the absence of serious changes that do not invade the deeper layers, it is possible to select and implement a radical type of treatment, satisfied with the response of US;

- In the diagnosis of the disease, economically expensive methods of radiation examination CT and MRI should be used only, when there are doubts about the diagnosis of the disease and the choice of radical treatment and in order to clarify these cases before operation;

- Using modern radiation examination methods separately and in a complex way, in our research it was possible to answer the question of the patients in which cases the organs may be saved or respected before surgical operation;

- Transfer of ducts into the skin and intestines after radical cystectomy using US, CT and MRI has been identified and radiation therapy for the destruction of local micrometastases, regardless of the area to which the ducts are transferred after surgery, allows to obtain more effective results;

- In order to reduce the incidence of relapse, which is the most unpleasant case after organ-saving surgery for bladder cancer, consecutive application of intravesical chemotherapy to patients with primary wound healing 1 month after surgery (once a week for 8 weeks, twice a month for 2 months, once a month for 8 months) leads to effective results and a significant reduction of frequency of relapse;

- The possibilities of transrectal US are irreplaceable in the detection of tumors in the anterior wall and in the apex of the bladder.

Scientific novelty of the research:

– In the presented research work, there was developed an algorithm in the diagnosis of kidney and bladder cancer, in determining the location of the tumor, the direction of development, the degree of invasion, the choice of radical treatment by making comparative analysis among them, using modern radiation examination methods (US, CT, MRI) and the degree of its effectiveness was clarified by selecting the most optimal method for patients;

– Depending on the degree of local spread of the process, changes in the surrounding tissues and neighboring organs, the accuracy, specificity and importance of the use of these tests separately and in a complex way have been investigated;

– The compiled algorithm provided reliable solution of surgical tactics in this group of patients.

Practical significance of the scientific work. According to the results of our research, a comparative analysis of modern radiological methods in the initial diagnosis of kidney and bladder cancer and the determination of the degree of invasion was studied and there was investigated in what sequence they are applied. Depending on the local prevalence of the process, it was clarified that in the early kidney cancer of T1-T2 stages, and in the surface of the bladder in the stages Ta-T1 with the absence of significant changes in the upper urinary tract and kidneys, it is possible to choose a radical type of treatment only being satisfied with US response as a non-invasive examination. Economically expensive examinations (CT, MRI) should be used only in the late stages of the disease (T3-T4) to clarify the diagnosis and to determine the presence of micrometastases in neighboring organs before surgery in terms of the choice of radical treatment. Due to the important role of the direction of development of renal tumors (extrarenal, intrarenal and mixed) in the choice of type of organ-saving surgery, it was possible to determine it very accurately with the help of US without additional preoperative examination. Transrectal US has been shown to be an irreplaceable examination for the detection of tumors in the

anterior wall and in the apex of the bladder. It is recommended to make extensive use of US as a non-invasive examination to monitor the course of the disease after surgery and for early detection of relapse.

Approbation of the scientific work was carried out at the following scientific meetings. At the conference of the Department of Urology at the Republican Clinical Hospital named after Academician M.A.Mirgasimov (Baku, 2012), the 6 th Congress of the Azerbaijan Association of Urologists and Andrologists (Gabala, 2012), the 7th Congress of the Azerbaijan Association of Urologists and Andrologists (Gabala, 2014), at the conference of the Department of Urology at the Teaching Surgery Clinic of the Azerbaijan Medical University (Baku, 2015), the 6th Winter Congress and Course of Urooncology (Baku, 2015), the 9th Congress of the Azerbaijan Association of Urologists and Andrologists (Mingachevir, 2015), the 10th Congress of the Azerbaijan Association of Urologists and Andrologists (Gabala, 2016), at the joint scientific conference of the staff of the Urology departments of the departments of general surgery, urology, oncology and anesthesiology of the Azerbaijan Medical University, Republican Clinical Hospital named after Academician M.A.Mirgasimov and the Central Basin Hospital named after M.N.Gadirli (December 17, 2019, protocol №3). Re-approval of the work was discussed at the Discussion Council, which held scientific seminars on Urology under the Dissertation Council 3234.01 - at the Azerbaijan Medical University Ed 2.06 in 2021 in accordance with the rules of quarantine 05.05.2021(protocol №4).

Published articles. 35 scientific articles on the topic of the dissertation, 8 of them were published abroad, the rest in Azerbaijani medical journals.

Application of research results. The main provisions of the dissertation were successfully applied and included in the treatment practice in the bases of the Republican Clinical Hospital named after M.A.Mirgasimov, Central Basin Hospital named after M.N.Gadirli, Department of urology of the Educational Surgery Corps of AMU, in

the departments of urology of the Oncology department of AMU, National Oncological Centre and other private clinics of Baku.

The place where the research was done. The dissertation work was completed at the Department of Urology of Azerbaijan Medical University.

Relation of research to the plan of medical science. The dissertation is included in the individual scientific work plan of the Department of Urology of the Azerbaijan Medical University for 2015-2019. State registration number № 01114058.

Volume and structure of the dissertation. The dissertation, presented on 370 pages, consists of an introduction (9 pages, 16 179 characters), 7 chapters (300 pages, 529 923 characters), results (14 pages 29 761 characters), a conclusion (1 pages, 2326 characters), practical advices (1 pages, 2066 characters), and a bibliography (38 pages). The total volume of the thesis is 580 255 characters without bibliography. The work is illustrated with 51 tables and 62 figures. The list of used literature consists of 393 sources and literature.

MAIN CONTENT OF THE DISSERTATION

Clinical material and Examination methods. The research work was carried out on the basis at the urology department of Azerbaijan Medical University, the Republican Clinical Hospital named after M.A.Mirgasimov, the Teaching Surgery Clinic and the Basin Hospital named after M.N.Gadirli. In order to fulfill the goals and objectives of the dissertation, observation was made over 320 patients diagnosed with kidney and bladder cancer, examined and treated in 2006-2016.

Of the patients we observed, 170 (53.1%) had kidney cancer and 150 (46.9%) had bladder cancer. The age range of patients diagnosed with kidney cancer was between 20-78 (average 61.7), 106 (62.4%) men and 64 (37.6%) women. The age range of patients diagnosed with bladder cancer was 26-85 (average 62.3), of which 139 (92.7%) were men and 11 (7.3%) were women.

The International Anti-Cancer Union's TNM classification was

used to group patients diagnosed with kidney and bladder cancer according to the stage of the preoperative process (table 1, 2).

Table 1
Grouping of patients with kidney cancer
according to the TNM system

Stage of disease		Number of patients (n=170)	
		Absolute	Absolute
T1	T1N0M0	29	17,1%
	T1aN0M0	15	8,8%
	T1bN0M0	14	8,2%
T2	T2N0M0	66	38,8%
T3	T3N0M0	55	32,4%
	T3aN0M0	32	18,8%
	T3bN0M0	18	10,6%
	T3cN1MX	5	2,9%
T4	T4N0M0	16	9,4%
	T4N1MX	4	2,4%

Table 2
Grouping of patients with bladder cancer
according to the TNM system

Stage of disease		Number of patients (n=150)	
		Absolute	Absolute
T1	T1N0M0	16	10,7%
T2	T2N0M0	56	37,3%
	T2aN0M0	34	22,7%
	T2bN0M0	22	14,7%
T3	T3N0M0	60	40,0%
	T3aN0M0	41	27,3%
	T3bNxMx	19	12,7%
T4	T4N0M0	18	12,0%
	T4aN0M0	14	9,3%
	T4bN1MX	4	2,7%

Despite the fact that the frequency of incidence of kidney and bladder cancer is getting younger, as most of the patients we

observed were over 40 years old, so many co-morbidities have been found in these patients in addition to the underlying disease. Great importance was attached to adjacent diseases in choice of radical treatment, which significantly increased the risk of surgical operation. In our observation, various comorbidities were detected in 125 out of 320 patients with kidney and bladder cancer.

Ischemic heart disease in 21 ($6.6\pm 1.4\%$) patients, post-infarction cardiosclerosis in 9 patients, diabetes mellitus in 16 ($5.0\pm 1.2\%$) patients, hypertension as a concomitant disease in 17 ($5.3\pm 1.3\%$) patients, kidney stones in 8 ($2.5\pm 0.9\%$) patients, bladder stones in 4 ($1.3\pm 0.6\%$) patients, renal cyst in 5 ($1.6\pm 0.7\%$) patients, chronic pyelonephritis in 10 ($3.1\pm 1.0\%$) patients, bladder diverticulum in 3 ($0.9\pm 0.5\%$) patients, chronic bronchitis in 3 ($0.9\pm 0.5\%$) patients, gastrointestinal disease in 7 ($2.2\pm 0.8\%$) patients, and chronic renal failure in 14 ($4.4\pm 1.1\%$) patients were met as co-morbidities. Six of these patients had kidney cancer and 8 had bladder cancer. Among other concomitant diseases, prostate adenoma was found in 13 ($4.1\pm 1.1\%$) patients and prostate cancer in 4 ($1.3\pm 0.6\%$) patients.

The main clinical symptoms in the patients we studied were pain in the kidneys and urinary tract, palpitation of swelling, hematuria, dysuric symptoms, weight loss depending on the stage of the process, high blood pressure, fever 38-39 and a decrease of hemoglobin in the blood. Blood was observed in the urine of 147 ($86.5\pm 2.6\%$) patients diagnosed with kidney cancer. Macrohematuria was registered in 136 (92.5%) of these patients, and microhematuria in 11 (6.4%). Of these patients, 16 were T1, 50 were T2, 61 were T3, and 20 were T4. Some literature data show that hematuria is 60-70% in patients with kidney cancer and 30-70% in others. Although microhematuria was shown to be 2.9%, our observation found a slightly different 6.4%. The presence of blood in the urine during the pathology depended primarily on the location and direction of development of the tumor. Blood in the urine was observed as primary and initial symptom in tumors developing from the renal pelvis and prone to intrarenal development. The presence of blood in the urine is closely related to the developmental stage of the process. Thus, although hematuria in

the early stages is characteristic for pelvic tumors, the collapse of tumor cells in the T3-T4 stage, opening of the vessels that feed them and rupture of capillaries due to the compression of large tumors caused hematuria. Based on the results of our research, we concluded that the large size of the tumor, the depth and location of the invasion rate are among the factors that further increase the risk of hematuria. Although the literature indicates that one in three elderly people with kidney cancer has pain symptoms, 34 (20.0±3.1%) patients have been reported. In 23 (67.6%) of these patients, the pain was dull and in 11 (32.4%) it was seizure-like. In our observation, most of the pain was recorded in patients with tumor in pelvic and middle segment. This is due to the compression of nerve endings and surrounding tissues by large-volume neoplasms. In our observation, the pain was in T1-5, T2-15, T3-11, T4-3 patients. The tumor was palpated in 19 (11.2±2.4%) patients with a large volume, T3-T4 stage, located in the lateral part of the lower and middle segment of the kidney tissue. Most of these patients were thin. By palpating the neoplasm, it was possible to study its consistency, mobility and attitude to the surrounding organs. This also played an important role in choosing the type of operation. Although tumor palpation was in T2-1, T3-9, T4-9, but there was no tumor palpation in stage T1. The triple symptom complex (pain, swelling, and hematuria) characteristic of kidney cancer was very rare in one patient. In our observation, the number of such patients was 7 (4.1%). Nephrogenic hypertension was reported in 27 (15.9±2.8%) of the patients under our supervision. 12 (44.4%) patients were women and 15 (55.6%) were men. Increased blood pressure was observed in patients with a large volume tumor in the pelvis and middle segment, with compressed parenchyma, previously exposed to the inflammatory process. It has been found that 15% increase in blood pressure is observed in the pathology mentioned by many authors. The main reason for this was the development of ischemia due to compression of healthy kidney tissue. Hypertension was observed in patients with T1-6, T2-10, T3-10, T4-1 on stages. Different degrees of anemia were observed in 38 (22.4±3.2%) of the patients we observed due to

bleeding caused by development of the tumor. In 15 (39.4%) of these patients, the amount of Hb in the blood was 80-90 g/l, in 12 (31.5%) 70-80 g/l, in 11 (28.9%) 60-70 g/l. In such patients, minor bleeding has aggravated the condition of already severely ill patients, leading to certain complications. Anemia was observed in patients T1-1, T2-7, T3-12, T4-18. In order to prepare for the operation, a group of patients received conservative treatment, and patients with a hemoglobin level of 60-70 g / l, in addition to conservative treatment, received fresh blood of the same group (250-500ml) after consultation with a hematologist. No additional complications were found in any of the patients. Various studies have shown that in 3.3% of patients with kidney cancer, varicocele develops as a result of compression of the inferior vena cava and directly the left testicular vein by large tumors located in the middle and lower poles. In our study, the number of such patients was 7 ($4.1 \pm 1.5\%$). Symptoms of hematuria, which are characteristic for bladder cancer, were observed in 138 ($92.0 \pm 2.2\%$) of our patients. Of these patients, 11 were in the T1 stage, 52 in the T2 stage, 57 in the T3 stage, and 18 in the T4 stage. Although the presence of blood in the urine, i.e. hematuria, was 92.2%, macroscopic hematuria was 76.4%. 15 (10.8%) patients reported blood in the urine at the end of urination, 21 (15.2%) reported that the urine was either clean or bloody, and the remaining patients reported complete blood in the urine. Different degrees of anemia were observed in 43 ($28.7 \pm 3.7\%$) patients. In 19 (44.2%) of these patients, the amount of Hb in the blood was 80-90 g / l, in 10 (23.3%), 70-80 g / l, in 9 (20.9%) 60-70 g / l, in 5 (11.6) 50-60 g / l.

Anemia was observed in patients T1-4, T2-9, T3-17, T4-13. Frequent, painful, difficult, and painful urination was observed in 103 ($68.7 \pm 3.8\%$) of patients diagnosed with bladder cancer. In 11 patients ($7.3 \pm 2.1\%$) we felt a solid mass in the anterior wall of the urinary bladder. The mobility of the mass, the attitude of the process to neighboring organs and tissues were clearly defined before the operation, which was of particular importance in choosing the type of operation to be performed. The fact that our clinic has a strong experience in this field has led to satisfactory results. Tumor

palpation was possible in patients T3-5, T4-6.

The presence of blunt and convulsive pain in the urinary tract in 63.3% of patients with bladder cancer has been reported in various literatures. In our observation, 27 (18.0±3.1%) patients had different degrees of pain during the mentioned pathology. Pain was felt in patients T2-1, T3-13, T4-13. Arterial hypertension was registered in 17 (11.3±2.6%) of the patients we observed. In 5 of these patients, arterial hypertension was registered in stage I, in 4 patients in stage II, and in 8 patients in stage III. In our observation, different degrees of increase in blood pressure were observed in patients T1-5, T2-11, T3-1.

Examination of patients. Some of the patients who came to us underwent some examinations and presented the results of one or another examination. Along with the results of the most common examination methods, the results of CT and MRI examinations were also presented. In our clinic, the results of the examinations of the disease were analyzed and the necessary additional examinations were carried out to determine the tactics of treatment. In this analytical process, it became clear that in many cases, complex and expensive examinations performed before visiting our clinic were applied without clinical need. In our research, by making comparative investigation, we tried to clarify the principle of applying a set of tests that justify any operation by determining the stage of tumor development while kidney and bladder cancer. In the study, patients were examined according to generally accepted guidelines. These include general analysis of blood, urine, biochemical analysis of blood to check the chronic renal failure, and functional tests for sugar and kidneys. Since 85-90% of the patients in our study are prone to bleeding, the study of the blood coagulation system, coagulogram is just as important as the determination of the amount of Hb in the blood in order to study the degree of anemia. Accurate determination of coagulogram is important because the majority of patients are elderly and have a high risk of thromboembolism. As a rule, palpation of the kidneys and urinary tract in all patients revealed the relationship of the process to the

surrounding tissues. In order to check the functional status of the kidneys and bladder in patients, a review, excretory urogram of the urinary tract was performed. In some patients with bladder cancer, cystoscopic examination was performed in 19 patients, although somewhat painful and traumatic, in order to clarify the diagnosis and determine the exact location of the hematuria. Examination was performed in patients with duct permeability and bladder capacity under local anesthesia, peridural anesthesia. The location of the tumor in the bladder, its size, appearance, direction of development, whether it is exophytic-endophytic, the presence of additional small tumor tissue were determined during the examination. In some patients with bladder cancer, bimanual palpation under anesthesia was performed to determine if the process had infiltrated into the surrounding tissues, prostate gland, uterus and uterine tract in women and rectum at the T3-T4 stage, where radical surgery was not possible. The examination was performed under general anesthesia due to muscle tension in the anterior abdominal wall. Thus, taking into account the large opportunities of radiation diagnostic methods (US, CT, MRI) in the early diagnosis of kidney and bladder cancer, determination of the degree of invasion, the choice of radical treatment, we tried to use this set of examinations in our research. The most important of these was the ultrasound examination, which was a convenient, non-invasive and cost-effective examination for patients. 63 (37.1%) patients of 170 (53.1%) diagnosed with kidney cancer, underwent ultrasound examination, 84 (49.4%) underwent computed tomography, and 23 (13.5%) underwent magnetic resonance imaging. 60 (40%) patients of 150 (46.9%) diagnosed with bladder cancer, had transabdominal examination, 22 (14.7%) had transrectal ultrasound, 53 (35.3%) had computed tomography, and 15 (10.0%) had Magnetic resonance imaging.

Research results and their comparative interpretation. In our research, we tried to clarify the expediency of developing an algorithm between them and the sequence of application of important methods by comparative analysis of existing diagnostic methods in the diagnosis of the disease. The rapid development of diagnostic

methods has allowed the development of new technologies of radiation examination methods and the opening of new horizons in the consistent use of these methods. Using these screening methods, we set a goal to select a radical treatment, assessing not only the factor of tumor detection, but also the local spread of the process and the presence of regional metastases. We divided the observed patients into two groups. Only transabdominal ultrasound examination was used to diagnose and determine the degree of invasion in the first group of patients, and radiation examination methods (US, CT, MRI) were used in a complex way in the second group of patients. Out of 170 (53.1%) patients diagnosed with kidney cancer, 63 were satisfied only with the results of ultrasound examination and appropriate treatment was prescribed without additional examinations, and in 107 patients, examinations were applied in a complex way (US, CT, MRI). In the first group of patients, the tumor was found in 34 (53.9%) patients in the right kidney, in 29 (46.1%) patients in the left kidney, in 58 patients in the parenchyma, and in 5 patients in the pelvis. Tumor was developed as upper in 17 patients (right-9, left-8), lower in 21 patients (left-13, right-8), middle-pole in 25 patients (right-16, left-9), in 35 of them tumor was developed on the upper part, in 28 in the lower part, extrarenal-15, intrarenal-37, mixed-11 patients. The size of the tumor was 2.0-4.0 cm in 18 patients, 4.5-6.0 cm in 21 patients, and 6.0-10 cm in 24 patients. T1-21, T1a-11, T1b-10, T2-28, T3-11, T3a-7, T3b-4, T4-3. There was found one tumor in 59 patients and two tumors in 4 patients.

According to preoperative ultrasound examination, kidney cancer is characterized by a number of features:

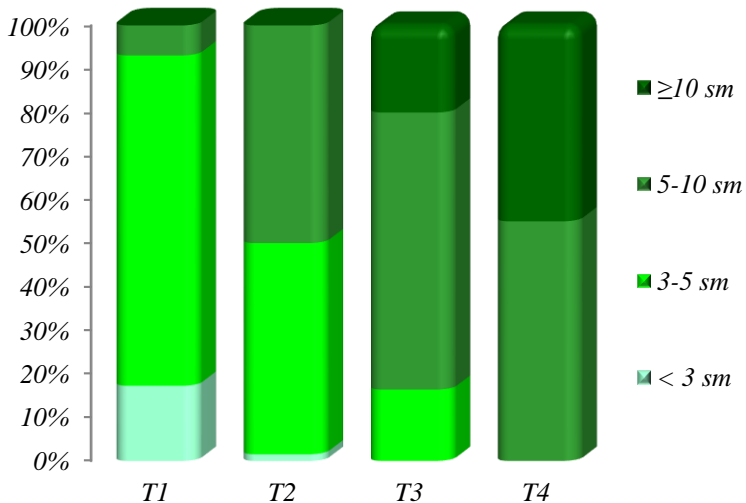
1. Tumors located in the kidney tissue have an oval and round shape, the edges are rarely smooth, and in most cases rough.
2. Hypoexogenic structure of the tumor in most patients.
3. Complete and partial hypoexogenic appearance of the tumor in some patients against the background of unaltered renal parenchyma.
4. Deformation of the edges of the kidneys, depending on the size of the tumor tissue.

5. Depending on the location of the tumor, deformation of the pelvic system is often encountered .

In general, ultrasound examination is characterized by its own features for each stage in determining the degree of invasiveness of the process. According to the ultrasound examination ,the dependence of the size of the tumor located in the kidney tissue on the degree of invasiveness of the process was determined very accurately(graphic1).

Stage T1: a small size of the tumor tissue - covering a small part of the renal parenchyma, and no deformation of the edges and the pelvic system is observed.

Stage T2: relatively large size of the tumor (3.0-5.5 cm) - complete coverage of the parenchyma in the area where it is found, covering any segment, a pronounced deformation of the pelvic system and the edges of the kidneys, a sonogram with the indented contours.



Graphic 1. Dependence between tumor stage and size in patients with kidney cancer.

Stage T3: big size of the tumor tissue (6.0-10 cm) incomplete observation of areas due to the transition of the process to the kidney tissue, uneven edges, undifferentiation of the pelvic system, non-monitoring of the parenchyma in areas where the tumor is found.

Stage T4: non-differentiation of the pelvic system due to the fact that the process covers the entire kidney tissue, diffuse changes in the renal crus, veins due to infiltration of tumor tissue, penetration of the process into the surrounding tissues, renal fascia, adjacent organs and muscles, indented edges, non-examined boundaries were observed. The transition of the process to neighboring organs and muscles was characterized by the presence or absence of motility of renal tissue during the respiratory and excretory phases during the examination. All this proves once again that the possibilities of ultrasound examination in determining the degree of invasiveness of the process are wide.

In our research, we sought to study the accuracy, sensitivity, and specificity of US in diagnosing disease and determining the degree of invasiveness of the process. In determining the degree of invasiveness of the process, the response of US in stages, specifically in renal cancer, was T1-97.9±1.2%, T2-94.2±2.3%, T3-92.2±2.5%, T4-98.0±1.1%. In determining the degree of invasiveness of the process, the US sensitivity was 89.7±5.7% at the T1 stage, 87.9±4.0% at the T2 stage, 87.3±4.5% at the T3 stage, and 85.0±8.0% at the T4 stage. Looking at the results, the ability of ultrasound to differentiate the T4 stage of the process was not so high compared to other stages. In our study, 84 (49.4%) of 170 patients underwent computed tomography to confirm the initial diagnosis of the disease, to determine the degree of invasion of the process, to detect changes in surrounding tissues, lymph nodes and to find metastases in separate organs. Of the patients undergoing computed tomography, 53 (63.1%) were men and 31 (36.9%) were women. Tumor tissue was found in 46 patients on the right kidney and in 38 patients on the left kidney. In 34 of these patients, the edge of the tumor was indented, in 27 it was smooth, and in 23 it was mixed. Tumor tissue was found in pelvic in 17 patients and in the

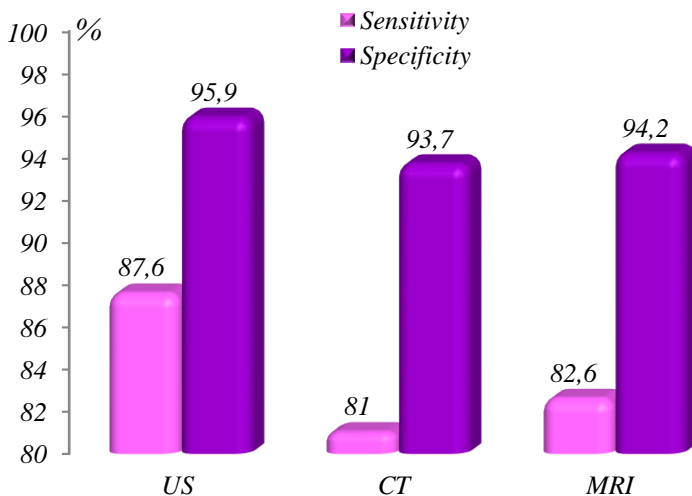
parenchyma in 66 patients. In 17 patients undergoing CT, the tumor tissue was located in the upper, in 29 patients in the lower, and in 38 patients in the middle pole of the kidney. In 23 patients out of 84 who underwent CT, were found extrarenal tumor, in 41 patients intrarenal tumor, and in 20 patients prone to mixed development. The size of the tumor was 2.0-4.0 cm in 17 patients, 4.0-7.0 cm in 31 patients, and 7.0-12 cm in 36 patients. T1-10 (11.9±3.7%), T2-35 (41.7±5.4%), T3-31 (36.9±5.0%), T4-8 (9.5± 3.7). In 6 out of 10 patients in the T1 stage, the process is in the T1a stage because the size of the tumor is between 2.0-4.0 cm, and in 4 patients in the T1b stage because it is between 4.0-6.0 cm, in 21 of the 35 patients in the T2 stage it was 6,0-8.0 cm, and in 14 patients it was between 7.0-11 cm. In 17 of the 31 patients in the T3 stage, the size of the tumor was 5.0-9.0 cm, in the T3a stage, the process infiltrates the adrenal tissue, in 3 of these patients the process infiltrates the adrenal gland, and in 10 patients in the T3b stage, the process invades the kidney and inferior vena cava. In 4 patients, the development of the tumor from the pelvis, as well as invasion of the renal crus and inferior vena cava was found to be in the T3c stage. In 18 of the 31 patients in the T3 stage, the tumor was shown to develop from the pelvis. In 6 of the 8 patients in the T4 stage, the tumor size was between 7.0 and 12 cm, invading the surrounding adipose tissue, renal crus, and herota fascia T4N0-6, and in 2 patients, invading to peripheral tissue, lymph nodes, and renal crus T4N1, in addition, 2 of these patients had metastatic nodules in the liver.

Thus, in determining the degree of local spread of the process in patients with kidney cancer, the specificity of computed tomography by stages was T1-97.3±1.9%, T2-90.0±4.2%, T3-83.9±4.7%, T4 - 97.4±1.8%, sensitivity was T1-84.6±10.0%, T2-76.3±6.9%, T3-80.8±7.7%, T4-72.7±13. The answer of computed tomography was correct in determining the degree of invasiveness of the process T1-80.1%, T2-88.5%, T3-83.3%, T4-87.5%. In the literature, the possibilities of examination in the differentiation of T3-T4 stages of kidney cancer are not so high, but in our study, on the contrary, there is a certain lack of distinction between T2-T3 stages. Although

computed tomography is less effective in differentiating stages T2 and T3 of kidney cancer, its ability to detect metastasis to the inferior vena cava, paraortal and paracaval lymph nodes, and adjacent organs has been evaluated. Despite the high evaluation of the possibilities of the examination, its high irradiance significantly limits its practical application. Thus, if the radiation of the body during a normal X-ray examination is 1 mSv, in the summary CT examination this figure is 10-15 mSv, and in the contrast CT of the abdominal cavity it is 20-40 mSv. A healthy person receives this type of radiation for 1-5 years in normal life. This leads to serious changes not only in the pathological tissue, but also in healthy organs and tissues. Taking into consideration that, computed tomography is less cost-effective and has a higher radiative effect in determining the local prevalence of the pathology in question, our observation used magnetic resonance imaging, a new form of radiation examination, in 23 (13.5%) patients, although it is expensive economically. According to the examination, in 14 patients the tumor was located on the right kidney (pelvis-4, parenchyma-10), in 9 patients on the left kidney (pelvis-3, parenchyma-6), in 7 patients in the upper, in 11 patients in the middle, in 5 patients in the lower pole, tumor's size in 6 patients was 4,0-6.5 cm, in 4 patients 3.0-4.5 cm and in 13 patients 7.0-12 cm. Although computed tomography, one of the other methods of radiation in determining the degree of invasiveness of the process, is less informative in the differentiation of T3-T4 stages, magnetic resonance imaging was distinguished from other examination methods due to its ability to differentiate all stages of the stages T1-T4. With the help of the examination, T1N0M0-3, T1a-2, T1b-1, T2N0M0-9, T3N0M0-7, T3aN0MX-4, T3bN0-1, T3cN0-2, T4N0M0-4, T4N0MX-2, T4N1M0-2 patients were defined before operation. In 2 of 3 patients in the T1 stage, as the size of the tumor was between 2-4 cm it was in the T1a stage, as it was greater than 4 cm in 1 person it was in the T1b stage, so in 9 patients in T2 stage the tumor size was between 7-11 cm. Out of 7 patients in the T3 stage, 4 had T3a, which invaded the adrenal tissue, 2 had T3b, which invaded the adrenal gland, kidney and inferior vena cava, and 1 had

T3c, which invaded the adrenal tissue, renal crus and inferior vena cava. It was determined that, in 2 out of 4 patients in the T4 stage, there was no differentiation of the pelvic system, which completely covers the renal tissue of the tumor, herota fascia passed to the process T4N0, and in 2 patients there was found regional lymph node damaging T4N1, besides the complete involvement of kidney tissue, renal crus, herota fascia in the process. Sensitivity by stages was T1-100%, T2- 66.7±19.2%, T3-83.3±10.8%, T4-80.0±17.9%, but specificity was T1-100%, T2- 94.7±5.1%, T3-76.9±11.7%, T4-95.0±4.9% 91.3%.

According to the results of our research work, 90.5% of ultrasound, 86.9% of computed tomography and 91.3% of magnetic resonance imaging answers were correct in determining the degree of invasion of kidney cancer (graphic 2).



Graphic 2. Possibilities of different examination methods in the diagnosis of kidney cancer and in determination of the degree of invasion.

In the early T1-T2 stage of kidney cancer, in cases which does not

invade deep layers, regardless of size, is prone to extrarenal development from the upper and lower poles, there are no changes in the surrounding tissues and lymph nodes, it is possible to decide on the choice of radical treatment without the use of additional economically expensive examinations, satisfied with the response of the US. However, at the end it can be concluded that when there are serious changes in the surrounding tissues at a late stage of the process, in order to determine infiltration of the process into neighboring organs, to specify the diagnosis in doubtful cases, and to determine the presence of micrometastases in neighboring organs before operation, a complex application of thoracoabdominal CT and MRI examinations allows getting more effective results.

Based on the application of radiation methods, we have divided patients with bladder cancer into two groups. Transabdominal ultrasound through the anterior part of the abdomen and transrectal ultrasound through the rectum was applied to the first-group patients, and radiation examinations (US, CT, MRI) were applied complexly to the second-group patients in diagnosing the pathology and determination of the degree of local spread of the process. 56 (37.3%) of 150 (46.9%) patients diagnosed with bladder cancer, were included in the first group and 94 (62.7%) in the second group. Ultrasound revealed tumor tissue in the left posterior wall of the bladder in 39 (26.0%) patients, in 14 of which the process infiltrated the superficial muscle layer, in 7 the process infiltrated only the mucous and submucous layer, in 8 patients it infiltrated the superficial and deep muscle layer, in 5 cases into all layers of bladder and surrounding tissues, and in 5 patients it infiltrated into the cervical region and penetrated into the prostate gland and seminal vesicles. In 11 of 37 (24.7%) patients, whose tumor located in the right posterior wall, the process penetrated into the deep muscle layer, in 4 patients it infiltrated into the mucosal and submucous layer, in 10 patients into the superficial muscle layer, in 7 patients into all layers, and in 5 patients it infiltrated into all layers and prostate gland. In 6 of the 29 (19.3%) patients, whose tumor is in the posterior wall and cervical region, the process infiltrated into the

superficial muscle layer, in 5 patients into the entire layers, surrounding tissues, and in 8 patients into the prostate gland, in 3 patients into the mucosa and submucous layer, and in 7 patients into the superficial and deep muscle. In 7 of these patients, the tumor tissue was located near the mouth of the right urethra, in 6 of the left urethra, and in 5 of both ureters, forming a hydronephrotic transformation in the upper urinary tract. In 13 of the 32 (21.3%) patients, whose tumor was found in the anterior wall and apex, the process infiltrated the superficial muscle layer, in 2 patients the mucosa and submucosa, in 9 patients the superficial and deep muscle layer, and in 8 patients all layers. In 13 (8.7%) patients, tumor tissue was found in the right and left lateral wall of the bladder. In 6 of these patients, the tumor was found in the right and in 7 of them in the left lateral wall of the bladder. Due to the lack of information on the anterior abdominal transabdominal ultrasound in the detection of urinary tract, apex, and cervical tumors, 22 (14.7%) of the patients we observed were made transrectal ultrasound examination through the rectum, although they were somewhat invasive and painful. In 9 patients undergoing transrectal ultrasound tumor was found in the anterior wall of the bladder, in 7 patients in the apex, and in 6 patients in the cervical region. In 5 of the patients with tumor tissue in the anterior wall, the process penetrated into the deep muscle layer, in 4 patients into the mucosa and superficial muscle layer. In 2 of the 7 patients with tumor tissue in the apex, the process infiltrated the mucous membrane and submucous membrane, in 1 patient the superficial muscle layer, in 1 patient the deep muscle layer, in 3 patients the all layers of the bladder. In 3 of the 6 patients with tumor tissue in the cervical region, the process completely infiltrated into all layers of the bladder and prostate gland, in 2 patients superficial, and in 1 into the muscle layer. There was found one tumor in 79 (52.7%) patients, two tumors in 33 (22.0%) patients, three tumors in 21 (14.0%) patients, and many tumors in 17 (11.3%) patients with the help of ultrasound examination. In 31 of these patients, the tumor tissue was on a thin crus (1-1.5 cm) and did not cause any changes in the surrounding mucous membrane. In 35 patients, the tumor tissue

was located on a slightly wider crus (2.0-2.5 cm), caused some changes around and edema in the mucosa, in 71 patients the tumor was on the broad crus, and in 7 patients the tumor was found to develop in the form of endophytes along the wall of the bladder. Although the number of tumors was incorrect in 7 (4.7%) patients at the time of appropriate surgery, the number of tumors was the same in 143 (95.3%) patients. Thus, although 3 tumors were shown in 21 patients before the operation, the results were consistent in 17 of them during the operation, and many tumors were confirmed in 14 patients. According to the results of postoperative pathohistological examination, the response of the process in stages was T1-93.7% correct, 6.3% incorrect, T2- 94.3% correct, 5.7% incorrect, T3- 89.6% correct, 10.4 % incorrect, T4- 91.3% correct, and 8.7% incorrect. In general, when comparing the results of transabdominal US by stages in all patients we observed after surgery, it was found that 92.1% were correct and 7.9% were incorrect. In 22 (14.6%) patients undergoing transrectal ultrasound, invasive rate of the process was T1N0M0-6 (22.7%), T2N0M0-7 (31.8%), T2a-4, T2b-3, T3N0M0-6 (27.2%), T3a-4, T3b-2, T4N0M0-3 (13.6%), T4N0-2, T4N1-1. The specificity of transabdominal US by stages was T1- 100,%, T2- 94.7±2.3%, T3- 92.2±2.8%, T4- 96.2±1.7%, and the sensitivity of the examination was T1 -93.8±6.1%, T2-92.9±3.4%, T3-85.0±4.6%, T4-83.3±8.8%. In 22 (14.6%) patients undergoing transrectal ultrasound, the invasiveness of the process matched the T1-T4 stage. Although there were some shortcomings in the response of the examination at the T2-T3 stages, in general the potential of transrectal US was highly appreciated. Thus, the sensitivity of transrectal ultrasound in determining the degree of invasion of bladder cancer was T1-85.7±13.2%, T2-66.7±3.4%, T3-85.7±13.2%, T4-100%, and specificity was T1-93.3±6.4%, T2-87.5±8.3%, T3-100%, T4-95.0±4.9%. Thus, 90.9% of transrectal ultrasound answers were correct and 9.1% were incorrect. Ultrasound examination was characterized by specific features for each stage in determining the degree of invasiveness of the process.

Stage T1: at this stage the process covered the mucous and

submucous layer, the tumor tissue was on a thin long crus, the base was clear, unchanged, the muscle membrane was free, the wall elasticity was fully preserved during the urination test, the shape and capacity of bladder was normal. In patients at this stage, no stagnation in the upper urinary tract was observed due to the small size of the tumor and the lack of compression of the ducts.

Stage T2: The process has infiltrated the superficial muscle membrane. In patients at this stage, the shape of the bladder is changed, the capacity is reduced, asymmetry towards the tumor, the wall is thickened, tense due to loss of elasticity, the process infiltrates the muscle membrane, stagnation is observed in the upper urinary tract due to compression of the duct, tumor's base is wide and clear, the neighborhood is changed.

Stage T3: In patients at this stage, the examination reveals a transition to the superficial, deep muscle layer, as well as to the tissue around the bladder. In this group of patients, the volume of bladder is sharply reduced due to the large size of the tumor and its infiltration into the deep layers, asymmetry is observed in the area of the tumor, the wall is not opened due to loss of elasticity, hydronephrotic transformation in the upper urinary tract is clearly observed. It was not possible to completely differentiate the boundaries of the tumor tissue crus with healthy tissue.

Stage T4: In this stage, the tumor is clearly visible, the process infiltrates into all layers of bladder, surrounding tissues, seminal vesicles, prostate gland, and these areas are seen in a sharply altered form. Due to the large size of the tumor, the shape of the bladder changed sharply, capacity decreased, the wall of the tumor tissue became immobile, the boundary between the surrounding tissues and bladder was not defined, the development of unilateral and bilateral ureterohydronephrosis was clearly seen in the upper urinary tract and kidneys. 53 (35.6%) patients underwent computed tomography were included in the second group. Tumor tissue was defined in the left posterior wall of bladder in 18 (33.9%) patients, in the right posterior wall in 16 (30.2%) patients, in the cervical region in 8 (15.1%) patients, in the posterior wall in 6 (11.3%) patients and in the anterior

wall in 5 (9.4%) patients. In 5 cases with tumor in the right posterior wall of the bladder, the process infiltrated the mucous and submucosal layer, in 15 patients (left-9, right-6) into superficial and deep muscle layer, in 7 patients (left-3, right -4) into all layers, in 3 patients with in the cervical region, the process completely infiltrated the muscular layer of the bladder, in 2 patients all the layers, in 3 patients all the layers and the prostate gland. In 4 of the patients with tumor in the posterior and anterior wall, the tumor was located close to the mouth of the ducts and infiltrated the superficial muscular layer of the bladder, in 5 patients the complete muscle layer, and in 2 patients all layers of the bladder. CT examination was performed in 36 (67.9%) patients with contrast and in 17 (32.1%) without contrast. In T1N0M0-8 (15.1%) patients, the process was between 2.0-3.0 cm, covering the mucous and submucous membrane. Although sensitivity was matched in 7 of these patients after surgery, in 1 patient the mismatch was found, i.e. the process was in the T2a stage. In 3 of the 8 patients at the T1 stage, the tumor developed from the left side of the bladder, in 4 patients from the right side, and in 1 patient from the posterior wall. In T2N0M0-24 (45.3%), patients the size of the tumor was between 2.5 and 3.5 cm, of which 14 had T2a, i.e. the spread of the process to the superficial muscle, and 10 had T2b, i.e. spread to the deep muscle membrane. After appropriate surgery, results in 20 patients coincided, and inconsistencies were noted in 4 patients. In 1 patient, the process was found to be in T1 stage, not T2a, and in 3 patients, it was found to be in T3a stage, not T2b. In 9 patients in the T2 stage, tumor tissue was found in the left side of the bladder, in 8 patients in the right side, in 3 patients in the posterior wall, in 2 patients in the cervical region, and in 2 patients in the anterior wall. In T3N0M0-16 (30.2%) patients the process invaded to all layers of the bladder, in 9 patients in T3a stage, in 7 people in T3b stage, the process was transferred to the surrounding tissue of bladder, in these patients the size of the tumor was between 5.0-8.0 cm, after surgical operation, answers matched in 13 of the 16 patients, only in 3 patients the results were found to be incorrect. False-positive answer was in 2 patients, i.e. the process was in the

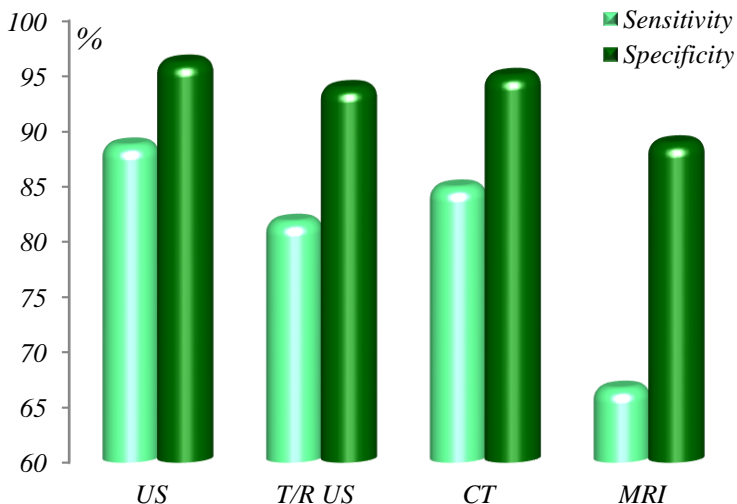
T2b stage, not T3a, and in 1 patient answer was false-negative, i.e. the process was in the T4a stage, not in the T3b. Tumors in patients in the stage T3 were found to develop left-sided in 5 patients, right-sided in 3 patients, anterior in 2 patients, cervical in 4 patients, and posterior in 2 patients. There were T4N0M0-5 (9.4%) patients. In these patients, the size of the tumor was between 6.0-9.0 cm, the process invaded the prostate gland and seminal vesicles in addition to all layers of bladder T4aN0-3, and in 2 patients the process invaded the peritoneum of the pelvic and abdominal wall, T4bN1 with growth in regional lymph nodes. Postoperatively, 1 of the T4 patients had a false-positive response, meaning that the process was in T3b, not T4a. From 5 patients in the T4 stage, 1 showed development of the tumor in bladder from the left side, 1 from the right side, 1 from the anterior wall, and 2 patients from the cervical region. In the CT diagnosis of bladder cancer, the sensitivity was T1-87.5±11.7%, T2-75.0±8.8%, T3-100%, T4-80.0±17.9%, and the specificity was T1-95.6±3.1%, T2-96.6±3.4%, T3-86.5±5.6%, T4-100. CT response according to the local prevalence of the process, i.e. on stages was T1-87.5% true, 12.5% false, T2- 83.3% true, 16.7% false, T3- 81.3% true, 18, 7% false. Although MRI is economically expensive due to its high cost, it was used to diagnose the disease and determine the degree of invasion in 15 (10.5%) of the patients we observed. In 3 patients with magnetic resonance imaging, tumor tissue was found in the right posterior side of the bladder, in 5 patients in the left lateral posterior, in 2 patients in the posterior, in 2 patients in the anterior wall, and in 3 patients in the cervical region of the bladder. In 11 of these patients, one tumor was found in the bladder, two tumors in 3 patients, and three tumors in 1 patient. The size of the tumor was 2.5-3.0 cm in 2 patients, 3.0-4.0 cm in 4 patients, 3.5-4.5 cm in 5 patients, and 4.0-5.0 cm in 4 patients. In 2 (13.3%) of the patients undergoing MRI, the process infiltrated only the mucous membrane of the bladder, and thus the pathology was found to be in the T1N0M0 stage. 4 (26.7%) of the patients were in the T2N0 stage of the process, in 2 of them the process was T2aN0 invading the superficial muscle layer of the bladder, and in 2 of them the process

was in the T2bN0 stage invading the deep muscle layer. Although the examination showed that in 6 (40.0%) patients the process invaded all layers of bladder and spread to the surrounding tissue T3N0M0, in 4 of them the process was T3aN0M0 in all layers of the bladder, and in 2 patients it transited from all layers to the surrounding bladder tissue T3bN0M0. In 2 of these patients, the tumor tissue was located close to the mouth of both ducts, which led to their partial seizure, resulting in the development of bilateral ureterohydronephrosis, and in 1 patient, it limited the mouth of left duct, leading to left-sided ureterohydronephrosis. In 3 (20.0%) patients, in addition to all layers of the bladder, the process infiltrated prostate gland T4aN0, in 1 female patient it infiltrated the uterus T4bN1. The specificity of MRI examination in patients with bladder cancer was T1-100%, T2-100%, T3-85.7±13.2%, T4-71.4±12.1%, and the sensitivity was T1-100%, T2-75, 0±21.7%, T3-50.0±17.7%, T4-100%. Thus, according to the results of our study, 88.6% of MRI answers were correct and 11.4% were incorrect in the diagnosis of bladder cancer and in determining the degree of invasion.

In our research work, we studied the appropriateness of the application of important methods in the diagnosis of bladder cancer by conducting a comparative analysis between modern radiation methods, and the results were as shown in the table below (graphic 3).

Depending on the location, size, direction of development and degree of invasion of the tumor, appropriate operations were performed on patients with kidney and bladder cancer. From 170 (53.1%) patients diagnosed with kidney cancer, 37 (21.7%) underwent organ-saving surgery and 133 (78.3%) underwent radical nephrectomy. In 17 of the patients who underwent nephrectomy, the pathology was found in pelvis, in 11 of them it was found in the intramural part of the urethra (7 right, 4 left) along with the pelvis, that is why the operation ended with a circular resection of the bladder and duct's part opening towards the bladder, along with the kidneys. Right-sided nephrectomy operation was performed in 76 (57.1%) patients and left-sided nephrectomy in 57 (42.9%) patients.

Depending on the location of the tumor, organ-saving operation was performed in our research in three main forms (resection, enucleoresection and enucleation).

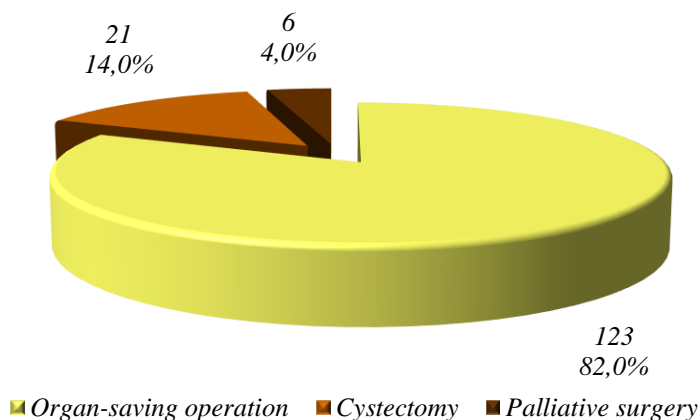


Graphic 3. Results of modern radiation examination methods applied in the diagnosis of bladder cancer.

Organ-saving surgery was performed in the form of resection of kidney tissue in 20 (11.8%) patients, enucleation of the tumor in 10 (5.9%) patients, and enucleoresection in 7 (4.1%) patients. In 123 (82.0%) of the patients diagnosed with bladder cancer, organ-saving operation, in 21 (14.0%) patients cystectomy, in 6 (4.0%) patients taking into account the severity of the condition, vital palliative surgery was performed only on raising ducts on the skin, bilateral closure of internal femoral arteries, lymphadenectomy was performed (graphic 4).

Depending on the location of the tumor in patients with bladder cancer, the following operations were made: resection of the left posterior wall of the bladder and left ureterosysteostomy in 14 (9.3%) patients, left-sided posterior wall resection in 22 (14.7%)

patients, resection of the right lateral posterior wall and right-sided ureterosistoneostomy in 11 (6.5%) patients, resection of the right lateral posterior wall in 19 (12.7%) patients, resection of the posterior wall by passing through bladder in 11 (7.3%) patients (by the method proposed by S.B. Imamverdiyev-1998), electroresection of the urinary wall in 25 (16.7%) patients, and transurethral resection (TUR) in 21 (14.0%) patients. Surgery was performed for the first time in 107 (86.9%) patients and for the second time in 16 (13.1%) patients due to recurrence of tumor tissue.



Graphic 4. Distribution of patients with bladder cancer according to the operations performed

Depending on the patients' condition, 9 (42.8%) patients underwent radical cystectomy - bilateral closure of the internal femoral arteries, lymphadenectomy and ureterosigmoidoplasty – transfer of ducts to the intestine. In 2 of these patients, the left kidney was also removed during the operation, taking into account the absence of left kidney function. Cystectomy and transfer of ducts to the intestine were performed in 5 patients by the method proposed by

S.B.Imamverdiyev, and in 4 patients by the Mainz-II method. In 12 (57.2%) patients, cystectomy was performed with ureterocutanestomy, closure of internal femoral arteries and lymphadenectomy. In our study, the serious condition of 6 patients resulted in the impossibility of performing radical surgery on them. These patients came to our clinic in the late T3-T4 stage, with total bladder damage, especially with metastases in the lung in 2 patients, in prostate gland and liver in 1 patient. In order to save the lives of these patients, we were able to perform palliative surgery – raising of ducts on the skin, closure of bilateral internal femoral arteries and lymphadenectomy. All patients underwent pathohistological examination of macropreparations removed during surgery. In patients with renal cell carcinoma was: 1) 68 (40.0%) patients with hypernephroid cancer G1-28 (41.2%), G2-21 (30.8%), G3-11 (16.2%), GX- 8 (11.8) patients, 2) Transparent cell cancer 47 (27.6%) patients, including G1-22 (46.8%), G2-13 (27.7%), G3-7 (14.9 %), GX-5 (10.6%), 3) Adenocarcinoma 27 (15.9%) patients, of which G1-12 (44.5%), G2-8 (29.6%), G3-5 (18,5%), GX-2 (7.4%), 4) 14 (8.2%) patients with medullary cell cancer, of which G1-6 (42.9%), G2-4 (28.6%), G3-3 (21.4%), GX-1 (7.1%), 5) Angiomioliposarcoma 14 (8.2%) patients, including G1-7 (50.0%), G2-3 (21.4%) %), G3-2 (14.3%), GX-2 (14.3%). Pathohistological response of patients with bladder cancer: 1). Transitional cell cancer - 68 (45.3%) patients, of these G1-23 (33.8%), G2-17 (25.0%), G3-20 (29.4%), GX- 8 (11, 8%), 2). Squamous cell carcinoma in 44 (29.3%) patients, G1-18 (40.9%), G2-14 (31.8%), G3-11 (25.0%), GX-1 (2.3%), 3). Adenocarcinoma 25 (16.7%) patients, G1-9 (36. 0%), G2-5 (20.0%), G3-4 (16.0%), GX-7 (28.0%), 4). Malignant papilloma 13 (8.7%) patients, G1-5 (38.5%), G2-2 (15.4%), G3-3 (23.1%), GX-3 (23.1%).

In 28(16,5%)of the 29(17,1%) patients who underwent T1 stage surgery for kidney cancer, the results were consistent after the operation, and only one patient was found to be incompatible, as the process was in T2 stage, not T1 stage. Although the results of the 14 of the 15 patients operated on with T1a-stage were consistent, the

postoperative results were completely consistent in 14 patients operated on with T1b-stage, where the process was in T2, not T1a in 1 patient. In 61(35,8%)of the 66(38,8%)patients who underwent T2-stage surgery, the invasiveness of the process coincided with the response to the pathohistological examination of the postoperative macropreparation in 5 patients, the answer was incorrect, in 3 patients the answer was not T2, the process was in T1b stage, and in 2 patients the answer was not in T2 stage, but in T3a stage. Of the 55(32,4%) patients who underwent surgery with T3-stage 51(30%)had postoperative results. Although the results were consistent in 31 of the 32 patients operated on with T3a, the process was in T2, not T3a, and in 17 of the 18 patients operated with T3b, the results were consistent, but one was not T3b, but T3a. Although the results were consistent in 3 of the 5 patients operated on with T3c, it was confirmed that the erroneous process in 4 patients was T4, not T3c, in one person. Although lymph node enlargement was noted in 3 of these patients, the lymph nodes that underwent changes during surgery were lymphadenopathy in 7 patients. 20(11,8%)patients underwent surgery at Stage T4. Although the results were consistent in 17(85,2%)of these patients, it was determined that in 3 patients the process was in the T3b stage, not the T4 stage. In determining the degree of invasiveness of the process by USM, there was an error of 9,6% at the T1 stage, 7,6% at the T2 stage, 7,3% at the T3 stage, and 14,9% at the T4 stage. Although CT scans showed that the tumor was in the pelvis in 18 patients, only 16 of them were found to be in the pelvis at the time of surgery. Although the degree of invasiveness of the process was appropriate in 8 of the 10 patients who underwent surgery with stage T1, 2 patients were found to be in T2 stage, not T1b. Although the results coincided in 31 of the 35 patients who underwent surgery with stage T2 in 4 patients it was confirmed that in 2 of them the local spread of the process was not T2, in stage T1b, and in 2 it was not T2, but in stage T3a. Although the results were the same in 26 of the 31 patients who underwent surgery with stage T3, the incorrect answer in 5 patients was that the process was not T3a in 3 of them and T3b

was not T3a in T2. In 7 of the 8 patients who underwent surgery with stage T4, it was determined that the process was in stage T3b, not T4, in only one patient whose answers matched. Thus, in the diagnosis of the disease 79(94,0%)patient answers were correct and 5(6,0%)patients were incorrect. 76(90,5%)were right and 8(9,5%)were wrong in the placement of the derivation, 73(86,9%)correct in determining the size of tumor tissue, 11(13,1%)incorrect, 38(92,7%)out of 41 patients shown intrarenaly in determining the direction od development 3(7,3%)incorrect in patients, extrarenally development has been perfectly matched. T1-80,1%,T2-88,5%,T3-83,3%,T4-87,5% although the answer of computer tomography in determining the degree of invasiveness of the process is correct, T1-19,9%,T2-11,5%,T3-16,7%,T4-12,5% were wrong. Although the possibilities of examination in differentiating T3-T4 stages of kidney cancer in pancreatic literature data are not so highly evaluated, in our research work, on the contrary, there is a certain lack of examination capabilities in distinguishing T2-T3 stages and being certain deficiencies were most likely due to the inexperience of the examining physician. In 23(13,5%)patients magnetic resonance imaging, a new form of radiation examination was used. According to the results of the preoperative examination, 4 patients showed infiltration of the process into the surrounding kidney tissue and spleen, but these were not detected during the operation. In 2 patients, the size of the tumor was 10,5 and 10cm.It was determined to be 12cm.Although 7 patients showed that the tumor developed from the pelvis, in 6 of them the results were consistent, one patient made a mistake. The results were consistent in patients operated on stage T1 and T3, the answers matched in 8 out of 9 patients operated on stage T2, and it was confirmed that the error process was in stage T3a, not T2, in only one patient. In two of the 3 patients who underwent T4 surgery, the answers matched and in one patient, not T4, but in T3b stage. When comparing the results of patients undergoing transabdominal ultrasound examination for bladder cancer, the results were consistent in 15 of the 16 patients operated on with T1stage, but it

was confirmed that the process was in T2a stage, not T1 in one person. Although the results were consistent in 32 of the 34 patients operated on with T2a, the process was in T1 in 2, the results were consistent in 21 of the 22 patients operated on with T2b, and only one was confirmed to be T3a, not T2b. Of the 41 patients operated on with T3a stage, 36 had consistent results, 5 had incorrect answers, 3 had T3b, not T3a, and 2 had T3b, not T3a. The results coincided in 19 patients in the T3b stage. The results were consistent in 16 of the 18 patients who underwent T4 surgery. Although the results were consistent in 12 of the 14 patients operated on with the T4a stage, in 2 patients it was confirmed that the process was T3b, not T4a. Of the 22 patients who underwent transrectal ultrasound, 20 had the same results. Out of 7 patients operated on with T2b, but T3a, the results were consistent in 5 of the 6 patients operated on with T3a, and it was confirmed that one was T2b, not T3b. It has been T4NOM0-3(13,6%). Thus, 90,9% of the transrectal ultrasound examination at the T1-T4 stage were consistent. Nevertheless, although there were some shortcomings in the response to the examination at the T2-T3 stages, the potential of transrectal USM was generally underestimated. The invasive nature of the examination limits its practical application. In our observation with the help of USM, the growth of lymph nodes in the left groin, 5 in the right groin and 3 in both groin of patients with bladder cancer was determined. Lymph nodes that were altered during the operation were removed from 14 patients, 8 of whom were confirmed to have pathology. Although 7(4,7%) patients had errors in the number of births was appropriate in 143(95,3%) during the appropriate surgery. Although 3 tumors were shown 21 patients before the operation, the results were consistent in 17 of them during the operation and many tumors were confirmed in 14 patients. There were errors in the placement of the tumor in 8(5,3%) patients compared to the previous results after the operation. CT scans were performed on 53 patients with bladder cancer. According to the CT response, the location, number and size of the tumor were appropriate in 47(88,7%) of the 53 patients operated on, and incorrect answers were received in 5(11,3%) patients. In 2 of

these patients the middle part of the prostate gland was enlarged into the urethra in 1 patient the presence of full-emptied ureterocele, and in 2 patients the hypertrophy of the cervical urethra was determined.

Thus, 88,7% of CT scans were correct and 11,3% were incorrect in the diagnosis of bladder cancer. Responses varied in stages in determining the degree of local invasion of bladder cancer. Thus, although the results were consistent in 7 of the patients operated on stage T1N0M0-8 in 1 patient it was determined that the process was at stage T2a, not T1, with a false negative response. Although the results were consistent in 20 of the T2N0M0-24 patients, they were incorrect in 4 patients, in 1 of which the process was not T2a, but in T1 stage, and in 3, not T2b, but in T3a stage. Although the results were appropriate after surgery in 13 of the T3NOMO-16 patients, there was a discrepancy in the results in 3 of the patients. In 2 of these patients, the process was found to be in T2b stage, not T3a, and in 1, the process was infiltrated into T4a prostate gland, not T3b.

According to the results of our study, the diagnostic potential of computed tomography in the differentiation of T2 and T3 stages of cervical cancer was not so high. In these patients the tumor tissue is located in the posterior wall of the urethra and in the Lyeto triangle. It has been determined that the prostate gland in men and the shadow of childhood in women have been reduced due to the lack of examination opportunities in differentiating the degree of invasive Ness of the process in the derivatives developing from these areas. In 13(86,7%) of the 15 patients who underwent MRI for bladder cancer, the location, number and degree of invasion were correct. The presence of 1 thorax, the superficial and deep layer of the process, and the infiltration of T3b into the surrounding tissues were confirmed.

In our research work, many early and late complications were encountered, despite the correct diagnosis of the disease using a separate and complex use of radiation methods, the exact degree of invasion, the choice of radical treatment and the experience of the surgeon. Patients undergoing nephrectomy and organ-saving surgery for kidney cancer have experienced a variety of complications over

the past year. 159 (93.5%) patients had no complications, 11 (6.5%) had various complications, 106 (85.1%) of 123 patients who underwent organ-saving surgery for bladder cancer recovered without complications, in 17 (14.9%) patients various complications were encountered. Despite the correct choice of indications for surgery and the high of experience of the doctor performing the operation, various complications were observed in some of the patients in the hospital and at home. Patients undergoing nephrectomy had been found the bleeding in 3 patients at the time of surgery, short-term development of chronic renal failure in 2 patients, pyelonephritis in 3 patients, after surgery in 1 patient, swelling in the wound area in 1 patient 10 months later and then there was a fistula which was opened and coming bloody secretion and in 3 patients local recurrence. Two of the patients who underwent nephrectomy for kidney cancer died of thromboembolism in the hospital and 3 patients died at home for various reasons. Early bleeding was observed in 3 patients, pyelonephritis 3, fistula opening 1, chronic renal failure in 3 patients undergoing organ surgery. We did not have any patients who died in our clinic and in the early 1 year after organ-sparing surgery. Some delayed complications were observed 1,5-2,5 years after surgery in patients undergoing nephrectomy, presence of pyelonephritis attacks in 7(5,2%) patients with renal insufficiency, 3(2,2%) patients had short-term delayed bleeding 2,7 years after surgery, in 5(3,7%) patients the development of chronic renal failure after 2,5 years, local recurrence of bed rest in 3(2,2%) patients after 2,7 years and opening of intestinal fistula in 1(0,7%) patient 2,3years after surgery. In patients undergoing organ-saving surgery there were some delayed aggravation 1-2,5 years after surgery, 5(13,5%) patients had pyelonephritis attacks, and 2(5,4%) patients had short-term delayed bleeding 2,2 years, after surgery, 4(10,8%) patients developed chronic renal failure 3,2 years later, 3 years later 2(5,4%) patients were denied local recurrence of bed rest.

The patients who died were those, who underwent radical nephrectomy and metastases. Thus, the 5 year survival rate in the

patients under our control was 95,3%.

Of these 4 patients had hematuriya, 3 patients had pyelonephritis attacks, 3 patients had dysuric symptoms, 2 patients had exacerbation 9 chronic cystitis, 2 patients had late closure of the supraspinatus fistula, and urinary stone formation. There were no deaths in our clinic from patients undergoing organ surgery, 1 patient after 6 months, 2 patients after 1 year relapse. Complications such as the narrowing of the right axillary 5-6cm from the opening of the right axillary to the proximal and development of chronic renal failure in 3 patients, opening of a intestinal fistula in 2patients,short-term pyelonephritis attacks in 4 patients were found in 1 out of 12 patients who underwent cystectomy surgery. In our observation, in one of the 9 patients whose ducts were transferred to the intestine, swelling developed in the left leg after the operation, in 2 patients the intestinal fistula opened, in 2,5 months it closed spontaneously, in 4 patients there were short-term pyelonephritis attacks, in 3 patients there was erythema. Narrowing of the part of the intestines transferred to the intestine was observed in 1 patient. Two patients died in our clinic due to polyorgan failure and 1 patient died of thromboembolism within 7 days surgery. According to bladder cancer, pyelonephritis attacks in 5 (4,0%) patients 2-1,5 years after surgery in patients undergoing organ surgery, 2 of them had exacerbation of pyelonephritis 1,5 years after surgery, 4 (3,2%)after 2,5 years blood in the urine of the patients, 2 (1,6%) opening of the supraspinatus fistula after 3 years, chronic urinary retention in 3(2,4%) patients, 2 (1,6%) patients after 3,2 years, 3(2,4%) the patient had delayed complications such as infiltration of the surrounding organs and prostate gland Relapse occurred in 4(3,2%)patients 1 year after surgery, in 5(4,0%)patients 1,5-2 years later, and in 11(8,9%) patients, within 2-4 years. In our observation, 1-3years after cystectomy, 4 patients developed metastases in 4 separate organs, 2 patients in the lungs, 1 patient in the liver, 1 patient in the brain, 3 patients in the peripheral organs, 3(11,1%)patients developed hyperchloremic acidosis, chronic renal failure were found. Narrowing of the part of the ducts transferred to

the intestine was observed in 1 patient. Two patients died in our clinic due to polyorgan failure and 1 patient died of thromboembolism within 7 days of surgery. Two of the patients who underwent palliative surgery died in the hospital. One of them is thromboembolism, the other is polyorgan failure, 1 patient in the next 6 months after surgery, 2 patients in 1,2 years, 2 patients in 2 years, and a total of 13 patients who have been in contact with us for 5 years died of tumor intoxication at home. From the patients who died were 6 underwent palliative surgery, 4 ducts removed on the skin, ducts transferred to the intestine and unilateral ureteronephrectomy, and the pathohistologically differentiated patients being G3 and GX. Recent relapses and complications have been reported in patients with cancer who did not contact us, did not receive anti-relapsing treatment, and did not have a differential response. In order to reduce the incidence of relapse after organ-saving surgery, patients with bladder cancer whose wound healed firstly 1 month after the operation received 30-50 ml of anti-tumor drugs once a week for 8 weeks, 2 times a month for 2 months, and once a month for 8 months, which was injected into the bladder endovesically, kept for 2 hours and then excreted through urination. One of another reasons was the correct choice of the type of surgery to be performed and the experience of the surgeon performing the operation.

Based on the results of our research, we concluded that in the early stages of kidney and bladder cancer (T1-T2), which does not invade the deeper layers, regardless of size, does not cause significant changes in the surrounding tissues and kidney's pelvic system, developing extrarenally in the upper and lower poles, located far from the mouth of the ducts, in patients who do not have hydronephrotic transformation in the upper urinary tract and kidneys, the diagnosis is fully confirmed on the basis of general analysis of blood and urine, biochemical examination of blood and ultrasound examination. CT, MRI methods do not add information that is of any different importance and that can change surgical tactics. Therefore, in this group of patients it is possible to confirm the diagnosis by

general examination, US examination, and additional excretory urography in pelvic system tumors, which provides a reliable solution to surgical tactics. In order to put an end to controversy over the diagnosis and choice of radical treatment in other patients (T3-T4), thoracoabdominal CT and MRI examinations were considered important for obtaining effective results, although they are economically expensive.

CONCLUSION

1. According to the results of a complex application of modern radiological examination methods with different diagnostic capabilities, providing a high degree of specificity and sensitivity, preoperative assessment of the local prevalence of kidney and bladder cancer is important in the choice of radical treatment [16; 17];

2. Our retrospective review has revealed that there is no need for additional, more complex and expensive examinations in relation to the stage of cancer development [11; 19];

3. The direction of development of the tumor, the degree of invasion, the condition of the crus, condition of surrounding tissues and lymph nodes, which play the most important role in determining the type of operation to be performed with the help of transabdominal US, were clearly defined before surgery [16; 18; 24];

4. In the diagnosis of kidney cancer and determination of the degree of invasion, US specificity was 95.9%, sensitivity 87.6%, CT specificity was 93.7%, sensitivity 81.0%, MRI specificity was 94.2%, sensitivity 82, 6% [17; 21; 33];

5. In the diagnosis and determination of the degree of invasion of bladder cancer, US specificity was 96.2%, sensitivity 88.7%, CT specificity was 95.0%, sensitivity 84.9%, MRI specificity was 88.9%, sensitivity 86 6%, specificity of Transrectal ultrasound examination was 93.9%, sensitivity was 81.6% [18; 21; 25];

6. In the early T1-T2 stages of kidney and bladder cancer, the diagnosis is fully confirmed on the basis of general analysis of blood

and urine, biochemical examination of blood, ultrasound examination. CT, MRI methods do not add information that is of any different importance and that can change surgical tactics. Therefore, in this group of patients it is possible to confirm the diagnosis by general examination, US examination, and additional excretory urography in pelvic system tumors consecutively, which provides a reliable solution to surgical tactics [32];

7. In cases where we are not satisfied with the US response in the differentiation of delayed T3-T4 stages of kidney and bladder cancer, the use of preoperative CT, MRI examinations is considered beneficial in terms of effective results to clarify the diagnosis and detect micrometastases in neighboring organs in order to choose radical type of treatment [14; 15; 35];

8. In our observation, the possibility of US along with CT, MRI, among modern radiation examination methods in making decisions about organ retention and removal in patients with kidney and bladder cancer is highly valued [7; 14; 31];

9. Transrectal US is considered an irreplaceable examination for the detection of tumors developing in the anterior and lateral walls and in the apex of the bladder [24; 25; 35].

PRACTICAL ADVICES

1. The application of modern radiation examination methods in a separate and complex way in the diagnosis of kidney and bladder cancer, in determining the degree of invasion and the choice of radical treatment allows to obtain effective results;

2. In the absence of significant changes in the early stages of kidney and bladder cancer (T1-T2), it is possible to choose a radical type of treatment without the use of additional expensive tests, satisfied with the response of US as a cost-effective examination;

3. In the choice of radical treatment in the late stages of the disease, satisfactory results can be obtained by applying modern radiation (CT, MRI) methods in conjunction with US to identify micrometastases in surrounding tissues and adjacent organs;

4. In our observation, it is possible to make a comparative assessment of the possibilities of US, CT and MRI examinations in determining the degree of invasion of kidney and bladder cancer;

5. The possibilities of US in determining the direction of development of the tumor (extrarenal, intrarenal and mixed), which is crucial in determining the type of organ-saving surgery in renal tumors, are highly valued;

6. Among the radiation methods in determining the size, number, location and degree of invasion of renal and bladder tumors, US is the most convenient and cost-effective for patients, so it is important to apply it to all patients as a routine examination;

7. Although it is somewhat painful, transrectal ultrasound examination passing through the rectum is more effective to detect tumors in the anterior wall, apex and cervical region of the bladder and to determine the degree of invasion;

8. In order to reduce the incidence of relapse in patients undergoing organ-saving surgery for bladder cancer, it is advisable to conduct endovezical chemotherapy once a week for 8 weeks, twice a month for 2 months, once a month for 8 months in patients with primary wound healing 1 month after surgery;

9. Transabdominal ultrasound examination of the kidneys and bladder every three months is important for the future of patients in terms of monitoring the course of the disease and the formation of relapse after surgery.

**Published scientific works of the content
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List of abbreviated terms

AH	–	Arterial hypertension
AML	–	Angiomiolipoma
AMU	–	Azerbaijan Medical University
ARF	–	Acute renal failure
AC	–	Adenocarcinoma
BC	–	Bladder cancer
CEA	–	Cancer embryonic antigen
CP	–	Chronic pyelonephritis
CRF	–	Chronic renal failure
CT	–	Computed tomography
ER	–	Electroresection
KC	–	Kidney cancer
KCC	–	Kidney cell cancer
KR	–	Kidney resection
KT	–	Kidney tumor
LD	–	Lymphadesection
MRI	–	Magnetic resonance imaging
NOC	–	National Oncological Center
PA	–	Prostate adenoma
PC	–	Prostate cancer
PS	–	Pelvic system
RC	–	Radical cystectomy
RCC	–	Renal Cell Carcinoma
RCH	–	Republican Clinical Hospital
RN	–	Radical nephrectomy
T/R	–	Transrectal
TCC	–	Transitional cell carcinoma
TUR	–	Transurethral resection
US	–	Ultrasound examination

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