

CLINICAL CASE

КЛИНИЧЕСКИЙ СЛУЧАЙ

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КЛИНИЧЕСКИЙ СЛУЧАЙ ЗЛОКАЧЕСТВЕННОГО НОВООБРАЗОВАНИЯ МОЧЕВОГО ПУЗЫРЯ С ОТДАЛЕННЫМИ МЕТАСТАЗАМИ РЕДКОЙ ЛОКАЛИЗАЦИИ

© Юлия Александровна Петрова, Наталья Сергеевна Чернова, Евгения Николаевна Ячкула, Ольга Дмитриевна Багрова, Нина Владимировна Пискунова

Городская Мариинская больница. 191014, г. Санкт-Петербург, Литейный пр., д. 56

Контактная информация: Юлия Александровна Петрова — заведующая патологоанатомическим отделением.
E-mail: yuliapatolog@gmail.com ORCID: <https://orcid.org/0009-0004-4880-788X>

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РЕЗЮМЕ. В данной статье представлен случай злокачественного новообразования мочевого пузыря с отдаленными метастазами у мужчины 62 лет. Опухоль обнаружена впервые в другом учреждении в июле 2022 года, предполагалось наличие канцероматоза плевры и метастазы во внутригрудных лимфатических узлах. Пациент получал химиотерапевтическое лечение, неоднократно проводилась трансуретральная резекция, гистологический тип опухоли соответствовал уротелиальной карциноме. При поступлении в Городскую Мариинскую больницу гистологический тип опухоли подтвердился, соответствовал высокодифференцированной уротелиальной карциноме с инвазией в паравезикальную жировую клетчатку. Клинические специалисты на основании инструментальных, физикальных и лабораторных исследований обнаружили метастазы в плевре, легких, регионарных лимфатических узлах, брюшине, мочеполовой диафрагме, костном скелете. На 9-е сутки госпитализации пациент скончался. При патоморфологическом исследовании, помимо обнаруженных клинически метастазов, были выявлены очаги опухолевой диссеминации в желудке, сердце, почках, печени. Уникальность случая заключается в нетипичной для данной опухоли локализации обнаруженных метастазов, а именно в желудке и сердце.

КЛЮЧЕВЫЕ СЛОВА: рак мочевого пузыря, уротелиальная карцинома, лимфогенные метастазы, гематогенные метастазы, метастазирование в сердце

CLINICAL CASE OF MALIGNANT NEOPLASM OF THE BLADDER WITH DISTANT METASTASES OF RARE LOCALIZATION

© Yulia A. Petrova, Natalia S. Chernova, Evgenia N. Yachkula, Olga D. Bagrova, Nina V. Piskunova

City Mariinsky Hospital. 56 Liteyny ave., Saint Petersburg 191014 Russian Federation

Contact information: Yulia A. Petrova — Head of the Pathology Department. E-mail: yuliapatolog@gmail.com
ORCID: <https://orcid.org/0009-0004-4880-788X>

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ABSTRACT. This article presents a case of malignant neoplasm of the bladder with distant metastases in a 62 year old man. The tumor was discovered for the first time in another institution in July 2022, the presence of pleural carcinomatosis and metastases in the intracoracic lymph nodes was assumed. The patient conducted chemotherapeutic treatment and transurethral resection. The histological type of tumor was urothelial carcinoma. Upon admission to the City Mariinsky Hospital, the histological type of the tumor was confirmed, corresponded to a highly differentiated urothelial carcinoma with invasion of paravesical adipose tissue. Clinical specialists after conducting research, based on instrumental, physical and laboratory analysis, discovered metastases in the pleura, lungs, regional lymph nodes, peritoneum, genitourinary diaphragm, bone skeleton. The patient died on the 9th day of hospitalization. During the pathoanatomic autopsy, metastases were detected in the stomach, heart, kidneys, liver. This clinical case is rare, since the process of metastasis was observed in the heart and stomach.

KEYWORDS: bladder cancer, urothelial carcinoma, lymphogenic metastases, hematogenous metastases, metastasis to the heart

INTRODUCTION

Bladder cancer is a serious disease. The detection system requires a thorough differential diagnosis. Incorrect or incomplete interpretation can often lead to relapse and progression of the tumor [1]. Bladder cancer is a polyetiological disease, often associated with the effect of carcinogenic substances in urine on urothelium. Smoking is a common risk factor for bladder cancer. The risk of developing bladder cancer also increases in diseases accompanied by chronic inflammation (chronic cystitis, concretions in the bladder, urostrasis, prolonged catheterization of the bladder) [2]. Dye factory workers and workers at a rubber products manufacturing plant have 30 times higher mortality rate from bladder cancer than the population average. Potentially dangerous productions: dyeing, rubber, petroleum, aluminum, textile, productions using resins, plastics, etc. [3]. Bladder cancer is more common in men than in women (a ratio of 3:1). This fact may be due to the fact widespread smoking among the male population and professions associated with carcinogenic substances increases the risk of developing this disease [4].

Metastases in malignant tumors of the bladder are found in every tenth patient. Highly differentiated bladder cancer is characterized by rapid lymphogenic metastasis. In 2/3 of cases, metastasis is diagnosed with invasive forms of tumors and much less often with superficial ones. First of all, the malignant process spreads to the lymph nodes located in the pelvis, with the further development of the disease — to the retroperitoneal

lymph nodes. With a hematogenic pathway, metastases are found in bone tissue, liver and lungs.

Metastases of bladder carcinoma are detected:

- in 75–80% of cases in retroperitoneal and pelvic lymph nodes;
- in 50% of cases in bones with the most intensive blood supply (pelvic, cranial vertebrae, ribs), while metastases exhibit osteolytic activity;
- in 25% of cases in the lungs, which is associated with the influx of a large amount of venous blood containing tumor cells;
- in 25% of cases in the liver;
- in 4–5% of cases in the brain;
- reproductive organs — are affected quite rarely;
- in the heart — extremely rare, due to the high intensity of blood flow in this area [5, 6].

Urothelial carcinoma is one of the most common malignant tumors of the bladder and upper urinary tract. The frequency of occurrence in the bladder, ureter and renal pelvis is 50:3:1, respectively [7].

OWN CLINICAL CASE

Patient X., 62 years old. He was admitted to another hospital in February 2023 due to difficulty urinating and hematuria. A bladder tumor T3N0M0 was detected, the histological type corresponded to urothelial carcinoma. Clinical specialists assumed carcinomatosis of the pleura and metastases in the intra-thoracic lymph nodes. The patient received a course of chemotherapy. In June 2023 (after 5 months), the patient turned

to the City Mariinsky Hospital. Transurethral resections of the bladder tumor were performed. Histological examination confirmed the histological diagnosis of the previous

hospitalization, it was highly differentiated urothelial carcinoma with invasion of the muscle layer. In September 2023, the patient was admitted again.

According to instrumental research:

- Ultrasound of the kidneys: sonographic signs of diffuse changes in renal parenchyma, focal formation of the bladder;
- Magnetic resonance imaging of the pelvic organs: MRI — picture of the formation of the bladder; secondary lesion of the pelvic peritoneum; secondary lesion of the lymph nodes of the pelvis; structural changes of the sacrum, secondary character is not excluded;

Radiography of the thoracic cavity: Rg is an image of numerous foci of different sizes and rounded shadows, interstitial changes in the lungs, polysegmental bilateral pneumonia (D>S). Bilateral small hydrothorax.

Based on instrumental, physical and laboratory analysis, metastases were diagnosed in the pleura, lungs, regional lymph nodes, peritoneum, genitourinary diaphragm, and bone skeleton.

Despite intensive treatment, the patient's condition progressively worsened due to multiple organ dysfunction syndrome. On the 9th day of hospitalization, the biological death of the patient was recorded. **The final main clinical diagnosis:** urothelial carcinoma of the bladder T3N1M1 (mts pleura, lungs, regional lymph nodes, peritoneum, genitourinary diaphragm, bone skeleton). The first line of polychemotherapy according to GemCard scheme № 2. Histological research: infiltrative urothelial carcinoma of high grade with invasion of the muscle layer.

The results of the pathomorphological research

Macroscopic description:

Bladder: a gray-pink exophytic small-papillary formation of elastic consistency with multiple foci of decay located on the anterolateral surface; tumor size is 6.3×5.2×6.0 cm. Tumor sprouts muscle and serous membranes of the bladder, paravesical fiber by 0.8 cm.

Retroperitoneal and pelvic lymph nodes are enlarged to 1.5×1.0×1.0 cm, not soldered together, compacted, white-gray, structureless on the incision.

Lungs: multiple elastic white-gray nodular formations with a diameter of 0.3 to 5.0 cm located subpleurally. The incision is white-gray, homogeneous on the section.

Liver: multiple white-gray nodular formations with a diameter of 0.3 to 6.0 cm located subcapsularly and in the thickness of the liver. The incision is white-gray with gray-red softened foci.

Kidneys: single nodular formations with a diameter of 0.2 to 1.5 cm (similar to those described above) located in the cortical and cerebral substances of both kidneys.

Stomach: dark red ulcerative defect with a diameter of 3.0 cm located on the mucous membrane in the region of the cardia. Section of the defect has homogeneous white-gray color. The defect is sprouting the mucous, muscular and serous membranes of the stomach.

Heart: a single nodular formation (similar to the one above) with a diameter of 3.0 cm is located on the epicardium of the heart's apex. This nodular formation on the incision is homogeneous, sprouting the entire epicardium, and the myocardium about 0.2 cm.

Microscopic description:

A histological analysis of the autopsy material revealed a highly differentiated infiltrative urothelial carcinoma with invasion into the paravesical adipose tissue 8120/3 (during the 1st hospitalization in June, based on the received surgical material, tumor complexes invaded only the muscle layer) (Fig. 1, A–C). Metastasis of urothelial carcinoma was detected in the regional lymph node, liver, lungs, kidneys, stomach, heart (Fig. 2, A–G).

The main pathoanatomic diagnosis: bladder cancer in the anterolateral region (C67.2) (highly differentiated infiltrative urothelial carcinoma of the bladder — histologically) with invasion of paravesical adipose tissue. Cancer metastases in retroperitoneal and pelvic lymph nodes, kidneys, liver, lungs, stomach, heart (pT3bN2M1).

CONCLUSION

A pathologist to develop new methods of diagnosis and treatment of bladder tumors has to not only determine the nosological affiliation of the neoplasm but also it's important to accurately determine the invasion's degree of differentiation and level of tumor [8]. One of the key factors in determining the prognosis of the disease, the choice of treatment tactics and the evaluation of treatment results is the correct assessment of the prevalence or stage of a malignant tumor join efforts with clinical specialists.

Urothelial carcinoma of the bladder is a common and socially significant disease, occupying the 7th place in the structure of oncological pathology, mainly diagnosed in middle-aged and older men [9]. Both for urothelial carcinoma and

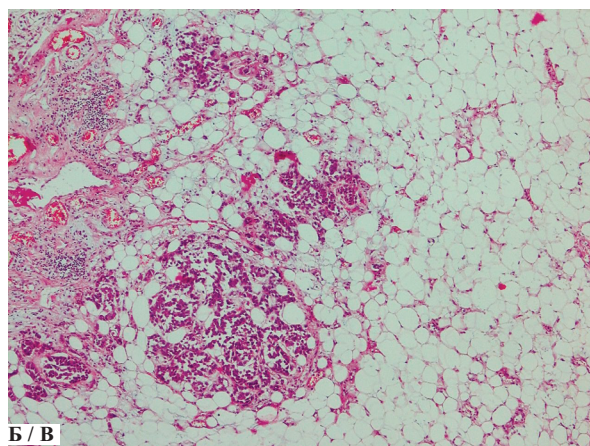
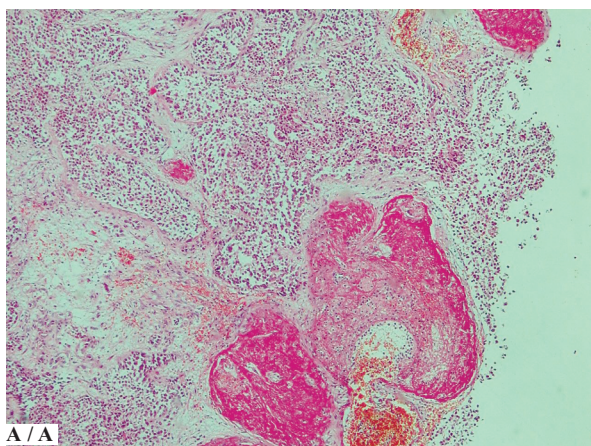
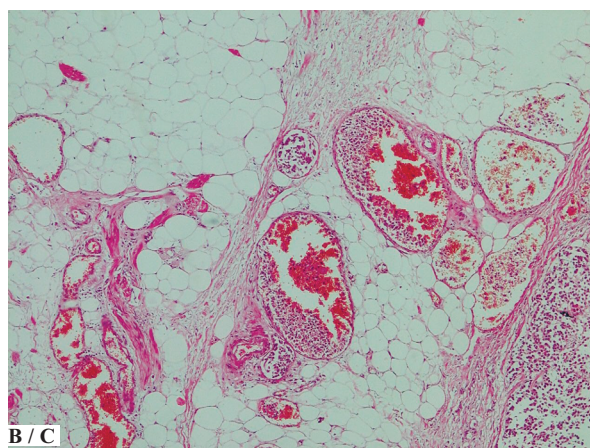


Рис. 1. Опухоль вырастает из мочевого пузыря, образуя гнездо-сплошные поля и тяжи. Опухолевые клетки с умеренным ядерным полиморфизмом и эозинофильной цитоплазмой. Отмечаются очаги некроза опухолевой ткани (А); определяются множественные опухолевые комплексы в жировой ткани (Б); опухолевые эмболы в сосудах перивезикальной жировой ткани (В) (×40)

Fig. 1. A tumor grows out of the bladder, forming a nest-solid fields and strands. Tumor cells with moderate nuclear polymorphism and eosinophilic cytoplasm. Foci of tumor tissue necrosis are noted (A); multiple tumor complexes in adipose tissue are determined (B); tumor emboli in the vessels of the perivesical adipose tissue (C) (×40)



for other malignant tumors of the bladder, a predominantly lymphogenic metastasis pathway is characteristic, therefore, regional lymph nodes are primarily affected. In the hematogenic pathway of metastasis, tumor foci are often found in the bones, liver and lungs. However, in rare cases, distant metastases can also be detected in atypical localizations. In this clinical case the stomach and heart turned out to be such localizations. Therefore, it is necessary to remember that metastases may not be diagnosed due to their rare localization. We hope that our case will help to demonstrate oncological alertness once again.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Вклад авторов. Все авторы внесли существенный вклад в разработку концепции, проведение исследования и подготовку статьи, прочли и одобрили финальную версию перед публикацией.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

Источник финансирования. Авторы заявляют об отсутствии внешнего финансирования при проведении исследования.

Информированное согласие на публикацию. Авторы получили письменное согласие представителей пациента на публикацию медицинских данных.

ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

Competing interests. The authors declare that they have no competing interests.

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Consent for publication. Written consent was obtained from the representative patient for publication of relevant medical information within the manuscript.

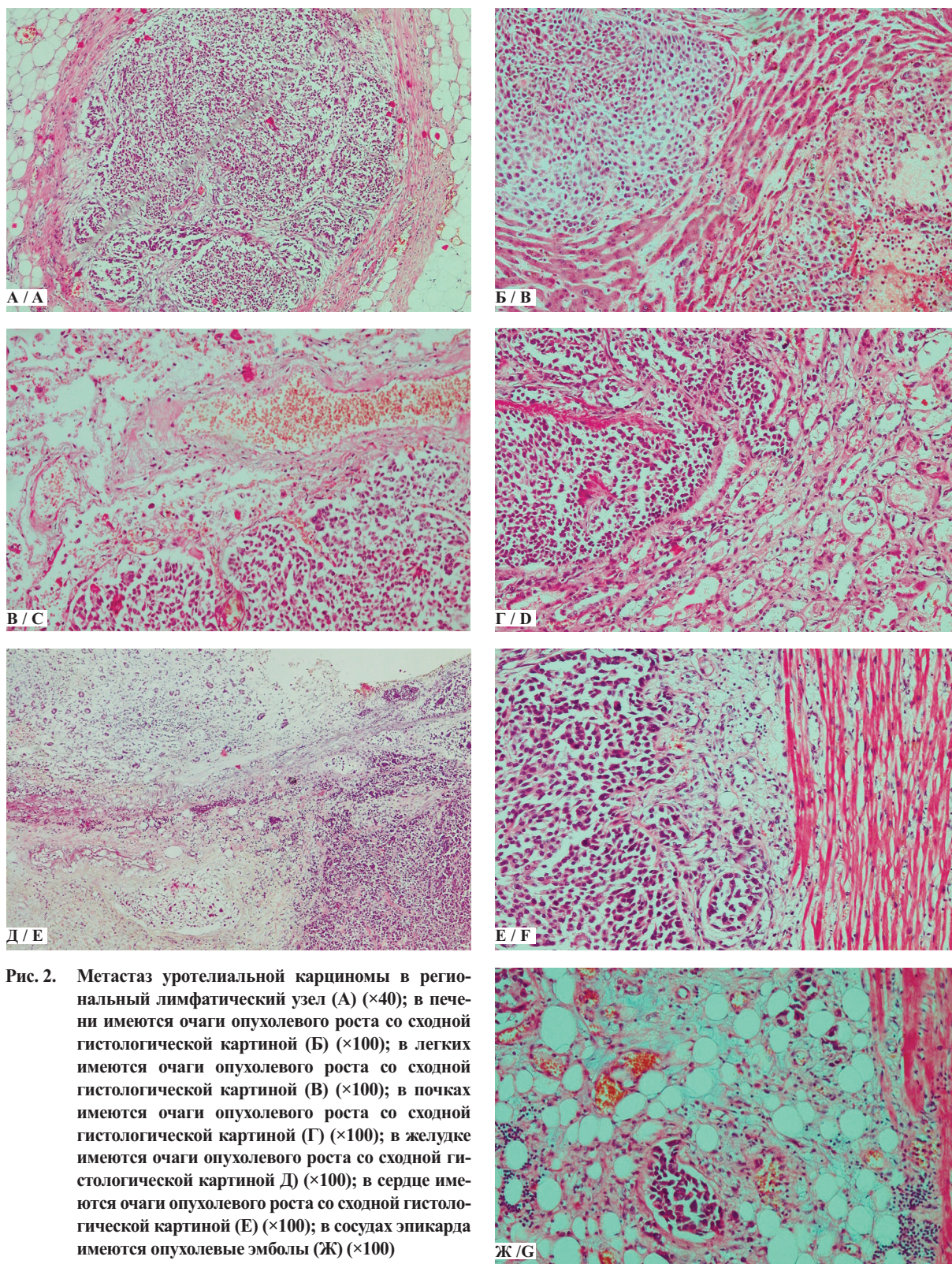


Рис. 2. Метастаз уротелиальной карциномы в региональный лимфатический узел (А) ($\times 40$); в печени имеются очаги опухолевого роста со сходной гистологической картиной (Б) ($\times 100$); в легких имеются очаги опухолевого роста со сходной гистологической картиной (В) ($\times 100$); в почках имеются очаги опухолевого роста со сходной гистологической картиной (Г) ($\times 100$); в желудке имеются очаги опухолевого роста со сходной гистологической картиной (Д) ($\times 100$); в сердце имеются очаги опухолевого роста со сходной гистологической картиной (Е) ($\times 100$); в сосудах эпикарда имеются опухолевые эмболы (Ж) ($\times 100$)

Fig. 2. Metastasis of urothelial carcinoma in the regional lymph node (A) ($\times 40$); there are foci of tumor growth in the liver with a similar histological pattern (B) ($\times 100$); there are foci of tumor growth in the lungs with a similar histological pattern (C) ($\times 100$); there are foci of tumor growth in the kidneys with a similar histological pattern (D) ($\times 100$); there are foci

of tumor growth in the stomach with a similar histological pattern (E) ($\times 100$); there are foci of tumor growth in the heart with a similar histological pattern (F) ($\times 100$); there are tumor emboli in the vessels of the epicardium (G) ($\times 100$)

ЛИТЕРАТУРА

1. Pesch B., Taeger D., Johnen G. et al. Screening for bladder cancer with urinary tumor markers in chemical workers with exposure to aromatic amines. *Int Arch Occup Environ Health*. 2014;87(7):715–724.
2. Burger M. et al. Epidemiology and risk factors of urogenital bladder cancer. *Eur Urol*. 2013;63(2):234–241.
3. Chavan S. et al. International variations in bladder cancer incidence and mortality. *Eur Urol*. 2014;66(1):59–73.
4. Taher A.N., Magdy H.K. Bone metastases in muscle-invasive bladder cancer. *Journal of the Egyptian Nat. Cancer Inst*. 2006;18(3):203–208.
5. Shinagare A.B., Ramaiya N.H., Jagannathan J.P., Fennessy F.M. et al. Metastatic pattern of bladder cancer: correlation with the characteristics of the primary tumor. *American Journal of Roentgenology*. 2011;196(1):117–122.
6. Османов Ю.И., Гаибов Ж.А., Коган Е.А., Раденска-Лоповок С.Г., Турсунов Х.З. Сравнительная морфологическая диагностика и иммунофенотип уротелиальных карцином почечной лоханки и мочевого пузыря. *Архив патологии*. 2018;80(5):23–32.
7. Андреева Ю.Ю., Данилова Н.В., Москвина Л.В., Завалишина Л.Э., Кекеева Т.В., Мальков П.Г., Франк Г.А.; под ред. Андреевой Ю.Ю., Франка Г.А. Опухоли мочевыделительной системы и мужских половых органов. Морфологическая диагностика и генетика. Руководство для врачей. Практическая медицина. 2014;2:218.
8. Li W.M., Shen J.T., Li C.C., Ke H.L., Wei Y.C. et al. Oncologic outcomes following three different approaches to the distal ureter and bladder cuff in nephroureterectomy for primary upper urinary tract urothelial carcinoma. *Eur Urol*. 2010;57(6):963–969.
9. Заратьянс О.В., Васильева Е.Ю., Михалева Л.М., Оленев А.С., Черкасов С.Н., Черняев А.Л. и др. Правила формулировки патологоанатомического диагноза, выбора и кодирования по МКБ-10 причин смерти. Класс II. Новообразования. Методические рекомендации. 2019;46:3–44.
10. Атлас по классификации стадий злокачественных опухолей. Прил. к 7-му изд. «Руководства по (TNM) классификации стадий злокачественных опухолей» и «Справочника» AJCC. Пер. с англ. под ред. А.Д. Каприна, А.Х. Трахтенберга. 2-е изд. М.: Практическая медицина; 2014:597–602.
2. Burger M. et al. Epidemiology and risk factors of urogenital bladder cancer. *Eur Urol*. 2013;63(2):234–241.
3. Chavan S. et al. International variations in bladder cancer incidence and mortality. *Eur Urol*. 2014;66(1):59–73.
4. Taher A.N., Magdy H.K. Bone metastases in muscle-invasive bladder cancer. *Journal of the Egyptian Nat. Cancer Inst*. 2006;18(3):203–208.
5. Shinagare A.B., Ramaiya N.H., Jagannathan J.P., Fennessy F.M. et al. Metastatic pattern of bladder cancer: correlation with the characteristics of the primary tumor. *American Journal of Roentgenology*. 2011;196(1):117–122.
6. Osmanov Yu.I., Gaibov Zh.A., Kogan Ye.A., Radenska-Lopovok S.G., Tursunov Kh.Z. Sravnitel'naya morfologicheskaya diagnostika i immunofenotip urotelial'nykh kartsinom pochechnoy loxhanki i mochevogo puzыrya. [Comparative morphological diagnosis and immunophenotype of urothelial carcinomas of the renal pelvis and bladder]. *Arkhiv patologii*. 2018;80(5):23–32. (in Russian).
7. Andreyeva Yu.Yu., Danilova N.V., Moskvina L.V., Zavalishina L.E., Kekeyeva T.V., Mal'kov P.G., Frank G.A.; pod red. Andreyevoy Yu.Yu., Franka G.A. Opukholi mochevydelitel'noy sistemy i muzhskikh polovykh organov. Morfologicheskaya diagnostika i genetika. [Tumors of the urinary system and male genital organs. Morphological diagnostics and genetics]. *Rukovodstvo dlya vrachey. Prakticheskaya meditsina*. 2014;2:218. (in Russian).
8. Li W.M., Shen J.T., Li C.C., Ke H.L., Wei Y.C. et al. Oncologic outcomes following three different approaches to the distal ureter and bladder cuff in nephroureterectomy for primary upper urinary tract urothelial carcinoma. *Eur Urol*. 2010;57(6):963–969.
9. Zarat'yans O.V., Vasil'yeva Ye.Yu., Mikhaleva L.M., Olenov A.S., Cherkasov S.N., Chernyayev A.L. i dr. Pravila formulirovki patologoanatomicheskogo diagnoza, vybora i kodirovaniya po MKB-10 prichin smerti. Klass II. Novoobrazovaniya. [Rules for the formulation of pathological diagnosis, selection and coding according to ICD-10 causes of death. Class II. Neoplasms]. *Metodicheskiye rekomendatsii*. 2019;46:3–44. (in Russian).
10. Atlas po klassifikatsii stadiy zlokachestvennykh opukholey. [Atlas on the classification of stages of malignant tumors]. Pril. k 7-mu izd. "Rukovodstva po (TNM) klassifikatsii stadiy zlokachestvennykh opukholey" i "Spravochnika" AJCC. Per. s angl. pod red. A.D. Kaprina, A.Kh. Trakhtenberga. 2-ye izd. Moskva: Prakticheskaya meditsina; 2014:597–602. (in Russian).

REFERENCES

1. Pesch B., Taeger D., Johnen G. et al. Screening for bladder cancer with urinary tumor markers in chemi-