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# COVID-19 in Patients With Renal Cell Carcinoma in the Russian Federation

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## Clinical Practice Points

- One-half of patients with renal cell carcinoma infected with severe acute respiratory syndrome coronavirus 2 required hospitalization.
- Eastern Cooperative Oncology Group performance status could be negatively changed in these patients.
- The mortality rate is higher than in people without cancer.
- Some patients could have renal cell carcinoma progression during coronavirus infection.

*Clinical Genitourinary Cancer*, Vol. 19, No. 2, e69-71 © 2020 Elsevier Inc. All rights reserved.

**Keyword:** COVID-19, Mortality, Outcomes, Renal cell carcinoma, Retrospective study

## Introduction

The World Health Organization has announced the pandemic of coronavirus infection 2019 (COVID-19), which can cause acute respiratory syndrome. As of June 13, 2020, Russia ranks third in the incidence of COVID-19 in the world. Patients with cancer are more susceptible to infections owing to systemic immunosuppression caused by malignant neoplasms and by anticancer therapy.<sup>1</sup> Patients with renal cell carcinoma (RCC) could also be more sensitive to infections owing to disorders in the immune system.<sup>2</sup>

The algorithm of the management for patients with RCC in Russia during the coronavirus pandemic was published on the website of the Russian Society of Clinical Oncology on March 24,

2020.<sup>3,4</sup> The proposed algorithm was based on the recommendations of professional communities or on information published on the official websites of professional societies, adapted for planning care for patients with RCC during the spread of COVID-19. The main goal of this algorithm was to reduce the risk of COVID-19 contamination, while not affecting the risk of RCC progression or death from kidney cancer. However, some patients with RCC were infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Here, we report results from the registry of patients with RCC infected with SARS-CoV-2.

## Patients and Methods

Patients were identified for the presence of COVID-19 symptoms or exposure to contacts with known SARS-CoV-2 infection in 9 centers located in the north, central, and east parts of Russia. Anonymized data were obtained by oncologists through an online registry covering demographics, treatments, and outcomes. Patients were enrolled if they had genitourinary tumors, including RCC. To be eligible, patients with RCC were required to have polymerase chain reaction-confirmed COVID-19 disease and were aged  $\geq 18$  years at the time of diagnosis. Data for this report were obtained from a retrospective study. All patients provided standard informed consent upon first call to the center.

## Results

Between March 10 and June 10, 2020, a total of 37 SARS-CoV-2-positive patients with genitourinary cancers were enrolled.

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Submitted: Jun 21, 2020; Accepted: Jul 12, 2020; Epub: Jul 16, 2020

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# COVID-19 in Patients With Renal Cell Carcinoma

**Table 1** Patient and Treatment Characteristics and COVID-19 Disease Outcomes

Characteristics	N (%)
No. patients	17
Mean age, y (range)	61 (40-81)
Gender	
Male	8 (47)
Female	9 (53)
Stage of RCC	
I	5 (29)
II	1 (6)
III	3 (18)
IV	8 (47)
Histology	
Clear-cell RCC	16 (94)
Papillary RCC	1 (6)
Multiple metastases	10 (59)
Lung	10 (59)
Liver	2 (12)
Lymph nodes	1 (6)
Bone	5 (29)
Pleura	1 (6)
Brain	1 (6)
Surgical treatment at the time of COVID-19	
Before surgery	1 (6)
After surgery	6 (35)
Median time from performed surgery to COVID-19, d	5.2
Systemic therapy at the time of COVID-19 infection	
Patients before first-line therapy	3 (18)
Patients during first-line therapy	4 (24)
Patients during subsequent therapy	3 (18)
Sunitinib	2 (12)
Cabozantinib	2 (12)
Nivolumab	1 (6)
Nivolumab + ipilimumab	1 (6)
Bevacizumab + interferon	1 (6)
Not started (in case of initial planning)	3 (18)
Interrupted (if the patient was on therapy)	5 (29)
Continued	2 (12)
Common symptoms of COVID-19	
Fever	12 (71)
Cough	7 (41)
Dyspnea	4 (24)
Fatigue	9 (53)
Complications of COVID-19	
Pneumonia	9 (53)
Acute respiratory distress syndrome	1 (6)
Respiratory failure	2 (12)
Multiple organ failure	1 (6)
Pancreatitis	1 (6)

**Table 1** Continued

Characteristics	N (%)
ECOG performance status at the time of COVID-19 infection	
0	3 (18)
1	3 (18)
2	8 (47)
3	2 (12)
4	1 (6)
The highest value of ECOG performance status for the entire period of COVID-19	
0	0
1	3 (18)
2	7 (41)
3	3 (18)
4	3 (18)
5	1 (6)
Frequency of ECOG performance status deterioration during COVID-19	9 (53)
Course of COVID-19	
Mild	6 (35)
Noncritical care hospitalization	5 (29)
Critical care hospitalization (oxygen therapy)	5 (29)
Mechanical ventilation	1 (6)
Median duration of COVID-19, d	21.0
Median length of hospitalization, d	16.2
Antiviral therapy	7 (41)
Hydroxychloroquine	6 (35)
Ritonavir + lopinavir	1 (6)
COVID-19 disease outcome	
Convalescence	12 (71)
Death	1 (6)
Disease is still ongoing	4 (24)
Median time from delay/interruption of treatment owing to COVID-19 to return to treatment, d	27.6
Clinical or radiologic RCC progression during the COVID-19 disease or within the next 30 days	
Yes	1 (6)
No	14 (82)
No data	2 (12)

Abbreviations: COVID-19 = coronavirus infection 2019; ECOG = Eastern Cooperative Oncology Group; RCC = renal cell carcinoma.

Seventeen (46%, 8 male and 7 female; mean age, 61.0 years [SD, 9.5 years]) patients had RCC. Almost one-half of the patients had stage IV cancer and multiple metastases, including lung lesions (59%). Thirty-five percent of patients underwent surgery  $\leq$  30 days before confirmed coronavirus infection. The median time from nephrectomy to COVID-19 was 5.2 days. First-line systemic therapy was planned for 18% of patients, but it was not performed owing to COVID-19. Forty-two percent of patients received targeted and immunotherapy at the time of infection, and 28% did not interrupt treatment.

Fever, cough, dyspnea, and fatigue were the most common symptoms of COVID-19 disease. Pneumonia, respiratory failure, acute respiratory distress syndrome, multiple organ failure, and pancreatitis developed in 53%, 12%, 6%, 6%, and 6% of cases, respectively. Eastern Cooperative Oncology Group performance status deterioration during COVID-19 was detected in 9 patients. Only 1 patient with coronavirus pneumonia required mechanical ventilation. Noncritical and critical care hospitalizations for COVID-19 symptoms were required in 29% and 29% of patients, respectively. All other patients with RCC had mild symptoms and were managed at home.

Two (11.8%) patients died 3 and 44 days, respectively, after development of COVID-19 symptoms. Seventy-one percent of patients recovered. The median duration of COVID-19 was 21 days, and the median length of hospitalization was 16.2 days. The median time from delay or interruption of treatment (surgery or systemic therapy) owing to COVID-19 to return to the same treatment plan was 27.6 days. Clinical or radiologic RCC progression during the COVID-19 disease or within the next 30 days was detected in 1 patient. Table 1 summarizes patient and treatment characteristics as well as disease outcomes.

## Discussion

Although this report is limited by small numbers, the results showed that the overall mortality of patients with COVID-19 with kidney cancer was lower (11.8%) than in patients with other malignancies. The TERAVOLT international registry of patients with thoracic tumors and French and Spanish registries demonstrated a higher mortality rate (14.6%-34.6%), and the hospitalization rate in these patients was 72.4% to 76%.<sup>5-7</sup> In our series, the hospitalization rate was 11% less. Interestingly, the frequency of mechanical ventilation was approximately the same in patients with thoracic tumors (2.5%) and RCC (6%) compared with other studies (21%-35.7%).<sup>5-8</sup> The length of hospitalization was similar across all registries (range, 12-29.4 days).

Two patients continued antitumor therapy, despite mild symptoms of COVID-19, and did not require hospitalization. However, performance status deterioration was reported in one-half of the patients, even after interruption of anticancer treatment. Also, it should be noted that some patients had RCC progression during coronavirus infection.

Larger studies are needed to evaluate the impact of COVID-19 disease on patients with RCC and genitourinary cancers.

## Disclosure

Authors are grateful to Pfizer Innovations Russia for scientific support. The authors have stated that they have no conflicts of interest.

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