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Current Perspective

Lessons from the coronavirus disease 2019 pandemic: Will virtual patient management reshape uro-oncology in Germany?



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Abstract The coronavirus disease 2019 (COVID-19) pandemic is challenging for physicians treating patients with genitourinary cancers as they are considered at high risk of severe events. The uro-oncology outpatient clinic at our academic institution was affected early by the outbreak owing to the widespread infection of healthcare personnel. Subsequently, we developed a strategy to ensure the patient's safety by efforts focused on strict quarantine observation, reduction of clinic visits and implementation of virtual patient management into the workflow. Furthermore, we analysed susceptibility to COVID-19 and its effects on patients with uro-oncological cancer treated with antitumoural agents. The goal is to warrant high-quality cancer care, despite being an academic centre on the front line of Germany's response to COVID-19.

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1. Background

The current coronavirus disease 2019 (COVID-19) crisis seems to heavily affect patients with metastatic cancers: preliminary data show that patients with cancer might be more exposed to the risk of infection owing to the high frequency of outpatient visits [1] and develop more

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severe course of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections [2].

Here, we present a best practice example on management of patients with metastatic genitourinary cancers during the current COVID-19 crisis. Our academic institution has been affected early during this pandemic, which urged us to adapt and implement changes in our standard treatment and follow-up procedures. We further aim to scrutinise the still unclear susceptibility of patients with cancer [3] and with several comorbidities to the novel coronavirus and the long-term effects of the pandemic outbreak in the uro-oncology population.

2. Methods

Patients undergoing systemic therapy for genitourinary cancers are prospectively included into a database at the University Hospital of Munich (Ludwig-Maximilians-Universität (LMU)). Chronic underlying diseases, side-effects of therapies, response to therapy and survival data are prospectively collected. Before initiation of the study, the local ethics authorities (Ethikkommission der Ludwig-Maximilians-Universität München) revised the project design and granted approval for the study (reference number: 19–942).

For diagnosis of SARS-CoV-2 infections, deep nasal swabs were taken 4 days after contact with SARS-CoV-2–positive individuals. A second swab was collected 4 days after the initial test. Testing for SARS-CoV-2 was performed either at the Department of Virology of

LMU Munich or at the Institute for Infectious Diseases and Tropical Medicine of LMU Munich. Polymerase chain reaction (PCR) was run for SARS-CoV-2-RNA N-Gene 1.

All patients with exposure to SARS-CoV-2–positive healthcare staff have been followed up daily for symptoms via phone or e-mail and were asked to write a symptom diary. They were advised to contact the primary care physician in case of mild symptoms and low-grade fever and go to the emergency room in case of severe symptoms and high fever. Asymptomatic patients were asked to contact the local health authority to perform a SARS-CoV-2 RNA PCR test 4 days after contact with the infected staff. Primary care physicians were asked to perform blood work at the patient's home when necessary for the treatment regimen.

3. Patients

A total of 120 patients with metastatic malignancies of the bladder (n = 48), kidney (n = 32) or prostate (n = 40) are currently under systemic therapy on our outpatient uro-oncology clinic (Table 1). The median age of all patients is 70 years (range = 33 to 90). The patients receive chemotherapy (n = 30), immunotherapy (n = 56), tyrosine kinase inhibitors after immunotherapy (n = 5), secondary androgen deprivation after upfront chemotherapy (n = 23) and Bacillus Calmette-Guérin (n = 2). Twenty-six patients visited the specialised outpatient uro-oncology clinic during the

Table 1
Patient characteristics of those exposed to COVID-19.

Patient characteristics	Chemotherapy (n = 13)		Immunotherapy (n = 10)	
	n	%	n	%
Age (years)				
Median	69		75	
Range	33–88		57–85	
Sex				
Male	9	69.2	8	80.0
Female	4	30.8	2	20.0
Cancer				
Prostate	5	38.5	1	10.0
Bladder	8	61.5	5	50.0
Kidney	0	0	4	40.0
Chronic underlying condition				
Hypertension	6	46.2	6	60.0
Cardiac disease	3	23.1	4	40.0
Obesity	2	15.4	3	30.0
Diabetes	2	15.4	2	20.0
Renal disease	2	15.4	1	10.0
Compromised immune system	0	0.0	1	10.0
Continuation of treatment				
Unchanged	0	0.0	6	60.0
Changed dosing interval	3	23.1	3	30.0
Change therapy	1	7.7	1	10.0
Referral to a resident oncologist	9	69.2	0	0.0

COVID-19 = coronavirus disease 2019.

outbreak of COVID-19 either for therapy or consultation. Twenty-three patients were directly exposed to healthcare personnel tested positive for SARS-CoV-2, and one patient was infected and was tested positive.

4. COVID-19 outbreak in a specialised outpatient uro-oncology clinic

In Munich, the first confirmed COVID-19 case was reported on 1st February. On 27th February, Ludwig Maximilian University Hospital implemented guidelines to face the upcoming COVID-19 situation. In the uro-oncology unit, we introduced surgery masks for patients and physicians on 11th March [4]. Despite all safety precautions, a COVID-19 outbreak occurred among the healthcare staff of the multidisciplinary outpatient oncology clinic, after a nurse developed symptoms and was tested positive to the novel coronavirus on 19th March. In the following days, all healthcare personnel in direct contact with the symptomatic nurse were screened for the SARS-CoV-2. One of the three urologists from the uro-oncology team was tested positive, as well as the entire nursing team and 3 physicians from the medical oncology department.

5. Reaction to the local outbreak

Twenty-four hours after the disclosure of the test results of the personnel, the entire unit of the multidisciplinary outpatient oncology clinic was shut down. On negative testing, only one urologist was dedicated to the care of all patients with uro-oncological cancer [5] on a biweekly rotation to minimise the patient's contact to staff. The physician observes frequent hand sanitation and maintains adequate distance from patients, while wearing a surgical mask. All patients with uro-oncological cancer are now treated in the urology outpatient clinic, currently used only for ambulant emergency procedures.

Twenty-three of 26 patients with uro-oncological cancer were exposed to infected healthcare personnel in the outpatient oncology clinic (Fig. 1): all were called and advised to undergo a strict quarantine as per national guidelines [6] (for further follow-up, see Methods).

As of 1st April, none of the patients developed symptoms, and owing to initial shortage in testing resources, only 5 patients underwent a swab test for detection of SARS-CoV-2. Around 4–6 days after the exposure, all initial tests were negative, and 1 patient was tested positive in the follow-up test.

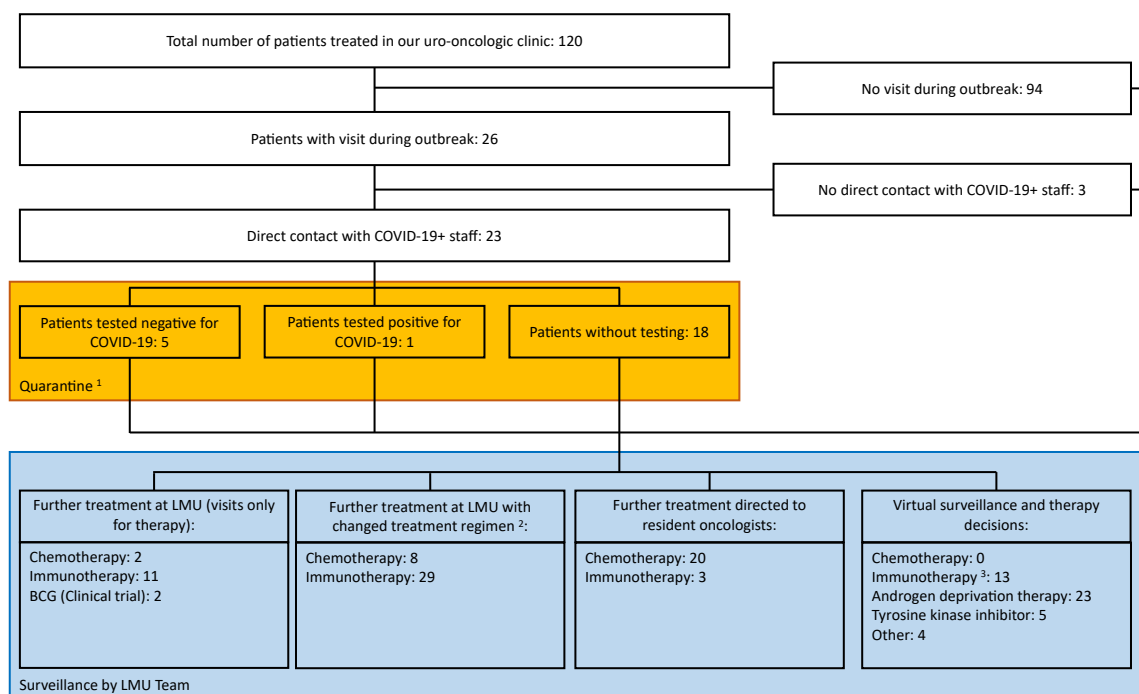


Fig. 1. Patient management during the outbreak and subsequent changes in therapy. Patients on systemic therapy who had direct contact with SARS-CoV-2-positive healthcare personnel were followed up for symptoms. As testing capacities were insufficient at this time of the pandemic, only 6 patients received COVID-19 testing as described. ¹Patients were asked to stay home for 14 days after exposure. Symptoms were followed up daily and were documented in a diary. ²Treatment regimens changes included prolonged cycle intervals or cycle modifications owing to the acute risk of exposure to infection or risk of immunosuppression. ³Immunotherapy was interrupted owing to toxicity (before the COVID-19 outbreak), and patients are followed up according to the European Society of Medical Oncology (ESMO) guidelines [8]. BCG = Bacillus Calmette-Guérin; COVID-19 = coronavirus disease 2019; SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2; LMU = Ludwig-Maximilian-Universität München.

6. Follow-up, treatment surveillance and therapy decisions during the COVID-19 pandemic

For all our patients with uro-oncological cancer not directly affected by the outbreak, we increase the alertness and follow infection protection measures while continuing safe and effective antitumoural treatment.

We aim to decentralise patient care from the academic centre to the primary and secondary care providers, but keep oversight over the treatment. Here, we leverage a network of cooperating physicians, radiologists, urologists and oncologists to reduce the risk of contact with infected patients in our hospital. Diagnostic blood tests and imaging for treatment follow-up and staging are preferably outsourced to private practices. On receipt of the reports, the uro-oncology team calls and counsels the patients.

Symptom checking is implemented by phone calls, and we are working on a specific patient-reported outcome app with COVID-19 modules [7]. Monitoring and management of side-effects from antitumoural therapy [8] are currently offered virtually, and clinic consultation is performed by phone calls and intensified e-mail contact. Documentation and patient data are transferred as per the current data protection laws [9]. Reimbursement for telehealth offers has been implemented for this exceptional situation.

Enrolment in clinical trials is paused. To save capacities in the healthcare system and reduce the risk of infection, subjects in ongoing trials are seen solely for the administration of medication. Study follow-up is maintained virtually, and testing is decentralised to private practices.

Multidisciplinary tumour boards for treatment decisions are currently being transformed to teleconferences or video conferences. Start of palliative systemic treatments, such as chemotherapies, is advised, but if options with lower risk of immunosuppression are equivalent, they are prioritised (e.g. secondary hormonal therapy against docetaxel [10]).

6. Systemic treatment

We reduce the number of visits per patient to an absolute minimum and prohibit the patient's companions during the visits. Before planned visits, patients are contacted to preclude COVID-19 symptoms. On hospital entry, patients are equipped with a surgical face mask and are directly guided towards a single room to avoid any contact with other patients or irrelevant healthcare personnel, but the treating physician. In clinically stable patients or patients who have been already on immunotherapy without signs of immune-related toxicities for several cycles, regimens are changed towards higher doses with prolonged interval [11]. Patients on chemotherapy are referred to private practices

with lower patient throughput. All patients undergoing chemotherapies and at high-risk of febrile neutropenia are treated with prophylactic growth hormones and or are subject to chemotherapy dosage reductions.

7. Study of susceptibility of patients with uro-oncological cancer to COVID-19

Based on our prospectively maintained institutional database, we study characteristics of patients in direct contact with COVID-19-positive individuals (Table 1). Data enrichment by merging information from institutions with similar experiences will promote evidence regarding the susceptibility of patients with uro-oncological cancer towards COVID-19.

8. Conclusion

The early precautions adapted ensured a low infection rate in our vulnerable patient population despite the widespread outbreak among the healthcare staff. Close monitoring of exposed patients and strategies to confine the infection risk for all our patients with uro-oncological cancer potentially lead to lower spread of COVID-19 without compromising cancer treatment.

As data on long-term follow-up are missing to date, we aim to prospectively collect data to assess the effectiveness of the actions taken and the treatment regimen modifications adapted. With continuation of the pandemic, our approach should be implemented and extended to all patients with cancer primarily treated at academic centres directly facing the challenges of the COVID-19 pandemic. From our experience, we learn that virtual management and reductions in frequency of visits are feasible and will likely impact the future treatment approach of patients with genitourinary cancers after the crisis.

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Conflict of interest statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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