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Table 1. Clinical outcomes from COVID-19 in prostate cancer patients on ADT, compared with those not on ADT

Clinical outcomes	Unadjusted OR (90% CI)	*P* value	Adjusted OR[a] (95% CI)	*P* value
Death	0.58 (0.16–2.13)	0.410	0.37 (0.08–1.80)	0.220
Hospitalization	0.24 (0.08–0.75)	0.014	0.23 (0.06–0.79)	0.020
Supplemental O_2 utilization	0.27 (0.09–0.82)	0.021	0.26 (0.07–0.92)	0.036
Intubation	0.30 (0.06–1.54)	0.150	0.31 (0.05–1.81)	0.192

ADT, androgen deprivation therapy; CI, confidence interval; COVID-19, coronavirus disease 2019; OR, odds ratio.
[a] Adjusted for age, cardiac disease, pulmonary disease.

COVID-19, compared with those infected patients not on ADT. Intubation rates and overall survival demonstrated similar trends but did not reach statistical significance. One important question not addressed in our study is whether ADT earlier in the disease course is more beneficial than in more severe cases.[6] Another limitation of this study is ascertainment bias. Specifically, one-third of our cohort were comprised of patients who reported information regarding COVID-19 testing carried out elsewhere, predominantly in the ADT cohort. This may largely reflect a population who contracted COVID-19 with minimal-to-mild symptoms.

Our data, in conjunction with the report from Alimonti and colleagues,[5] suggest that ADT may have a protective effect in decreasing the severity of COVID-19. Given our study limitations, we aim to develop a larger multi-institution dataset for validation. Additionally, a prospective clinical trial is warranted to answer this important clinical question.

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An analysis of cancer patients with asymptomatic infection of SARS-CoV-2 in a cancer center in Wuhan, China

The asymptomatic infection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has now become the focus of epidemic control in Wuhan. Patients with cancer, a large population of immunocompromised individuals, have been observed to have a higher risk of coronavirus disease 2019 (COVID-19) infection.[1] However, reports on cancer patients with asymptomatic infection are still scarce.[2]

A retrospective study was performed to evaluate asymptomatic infections in 5119 individuals without typical symptoms of COVID-19 infection (including 2818 patients

with cancer and 2301 caregivers without cancer). These individuals received an oropharyngeal swab test for SARS-CoV-2 nucleic acid by RT-PCR and/or serum specific antibody [immunoglobulin M (IgM) and IgG] test from 29 March to 23 April 2020, in Hubei Cancer Hospital, Tongji Medical College, Huazhong University of Science and Technology (Wuhan, P. R. China). The asymptomatic infections were identified by positivity to nucleic acid and/or antibodies (IgM/IgG). The incidence of infection was calculated as the proportion of infected individuals in the population.

The incidence of asymptomatic infection was 2.9% (81/2818) in patients with cancer, whereas it was 2.1% (49/2301) in their caregivers. There was no statistical difference in infection risk between patients with cancer and their caregivers [relative risk 1.36, 95% confidence interval (CI) 0.95—1.95]. Furthermore, positive results were not simultaneously observed in both patients and their caregivers. The close contacts and index patient were followed up for 10—32 days, and none of them developed symptoms.

We also evaluated the correlations between age, sex, or anticancer treatment, and asymptomatic infection in patients with cancer (Table 1). All the infected patients with cancer received anticancer treatment within the past 2 months. A total of 12 patients (14.8%) were diagnosed with stage IV cancer. Breast cancer was the cancer type with the most frequent infections. Among patients with cancer, chemotherapy [odds ratio (OR) 4.65, 95% CI 2.39—9.06] and targeted therapy (OR 1.90, 95% CI 1.18—3.05) were the risk factors for infection.

It remains largely unclear how to prioritize the treatment of patients with cancer in the postpandemic period. The available evidence is limited.[3] Our research originally suggested some highlights on 'truly' asymptomatic infection in patients with cancer in Wuhan, China, who were symptom free over the preceding 14 days. In our present study, patients with cancer exhibited the equivalent susceptibility of asymptomatic infection compared with their caregivers. However, these patients with cancer possess a higher risk than those without,[4] suggesting that frequent exposure to

Table 1. Association analyses of age, sex, anticancer treatment, and tumor diagnosis in cancer patients with asymptomatic infection

	With asymptomatic infection	Without asymptomatic infection	P[a]	OR (95% CI)
Total	81 (2.9)	2737 (97.1)		
Age, mean (SD), years	56.4 (10.9)	54.8 (12.3)	0.27	—
≥60	34 (41.98)	1036 (37.85)	0.45	1.19 (0.76—1.86)
<60	47 (58.02)	1701 (62.15)		
Sex				
Male	35 (43.2)	1368 (50.0)	0.23	0.76 (0.48—1.19)
Female	46 (56.8)	1369 (50.0)		
Anticancer treatment				
Surgery				
Yes	48 (59.3)	1377 (50.3)	0.11	1.44 (0.92—2.25)
No	33 (40.7)	1360 (49.7)		
Radiotherapy				
Yes	13 (16.1)	309 (11.3)	0.18	1.50 (0.82—2.75)
No	68 (83.9)	2428 (88.7)		
Chemotherapy				
Yes	71 (87.7)	1832 (66.9)	<0.01	4.65 (2.39—9.06)
No	10 (12.3)	905 (33.1)		
Target therapy				
Yes	26 (32.1)	546 (19.9)	<0.01	1.90 (1.18—3.05)
No	55 (67.9)	2191 (80.1)		
Immunotherapy				
Yes	4 (4.9)	203 (7.4)	0.40	0.65 (0.24—1.79)
No	77 (95.1)	2534 (92.6)		
Tumor diagnosis[b]				
Breast cancer	24 (29.6)			
Lung cancer	16 (19.8)			
Liver cancer	12 (14.8)			
Gastrointestinal cancer	11 (13.6)			
Brain tumor	3 (3.7)			
Endometrial cancer	3 (3.7)			
Lymphoma	3 (3.7)			
Cervical cancer	2 (2.5)			
Prostatic cancer	2 (2.5)			
Glottic cancer	1 (1.2)			
Tumor stage[c]				
Stage I/II/III	69 (85.2)			
Stage IV	12 (14.8)			

Data are presented as *n* (%) unless noted otherwise.
[a] Continuous variables were analyzed with Student's *t*-test and categorical variables were analyzed with the χ^2 test.
[b] Only the top 10 tumor diagnoses are listed.
[c] Tumor stage according to the AJCC (American Joint Committee on Cancer) Cancer Staging Manual, version 7.

SARS-CoV-2 can increase the infectious risk of patients with cancer who receive anticancer treatment, but not cancer itself. Moreover, our findings indicated feeble virulence and transmission of asymptomatic infections. Therefore, admission of cancer patients with asymptomatic infection might not trigger a nosocomial infection if the rigorous infection control and personal protection procedures are followed. We also evaluated the risk factors of the infection in patients with cancer, and our data indicated that chemotherapy and targeted therapy could increase the infectious risk. To develop a reasonable and balanced treatment strategy between cancer and infection, analyses should be performed to evaluate whether anticancer treatments might predispose patients to the more severe outcome of asymptomatic infection, particularly chemotherapy and targeted therapy.

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