Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the Editor

SARS-COV-2 infection in patients with cancer undergoing checkpoint blockade: Clinical course and outcome

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The potential interplay between severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection and treatment with immune-checkpoint inhibitors (ICIs) of patients with cancer is presently unknown [1]. In this context, the increasing spreading of the coronavirus (COVID-19) pandemic does not help; in fact, major health resources are being redirected to counteract the pandemic [2], raising the concrete risk to hamper cancer care significantly [3]. As a result, the COVID-19 status of patients with cancer is generally not evaluated at the beginning and/or in the course of their medical treatment. In addition, the vast majority of patients with cancer receive therapy on an out-patients basis; thus, asymptomatic COVID-19 positive patients are generally free to access the Oncology Units, representing a major challenge for the possible transmission of SARS-CoV-2 to hospital personnel. On the other hand, these very same patients are challenged with the potential risk that ICI therapy may exacerbate the clinical course of their COVID-19 infection and/or that COVID-19 infection may worsen ICI-related side effects. In this composite and potentially cross-interfering scenario, sharing with the oncology community initial observations, even on a limited number of cases, may support treating physicians in their daily practice.

On March 6, an asymptomatic, 74-years-old male, Eastern Cooperative Oncology Group (ECOG) PS0, who was diagnosed with a metastatic cutaneous melanoma on November 2015 (patient 1), accessed our outpatient clinic with normal clinical and bio-humoural parameters to receive his 83rd cycle of an anti–PD-1 monoclonal antibody (mAb), being in partial objective response since June 2016. Worth mentioning, he had undergone right nephrectomy for a pT1N0M0 renal cell carcinoma on February 2016, and on October 2019 he had received a gastric wedge resection for a low-risk GIST. On March 16, the patient was admitted to the emergency room at a different hospital with a 4 days history of fever >38.0 °C, mild dyspnoea and cough and oxygen saturation of 94%. Routine nasopharyngeal and oropharyngeal swabs revealed SARS-CoV-2 infection, and the patient was therefore hospitalized (Fig. 1). Computed tomography (CT) scans revealed a bilateral pneumonitis, and laboratory

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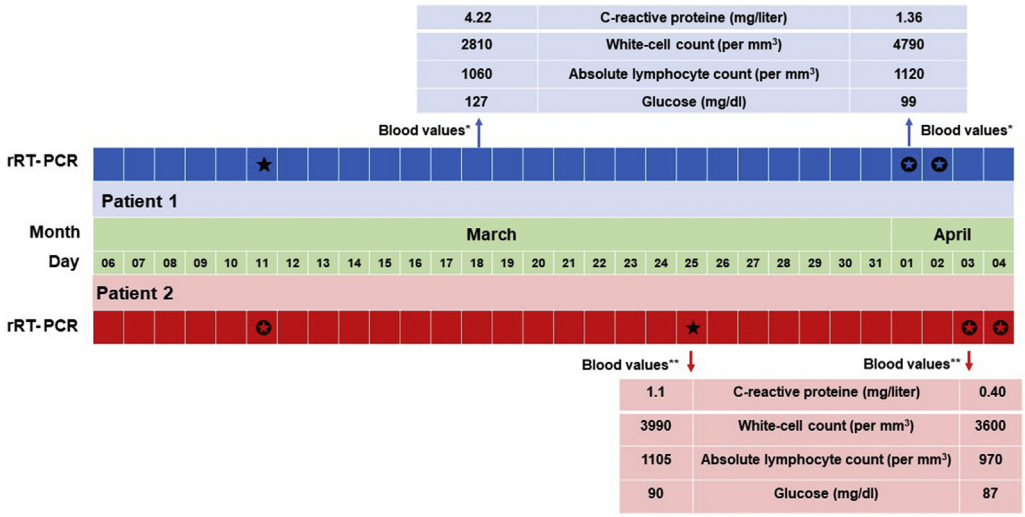

Fig. 1. **COVID-19 assessments and bio-humoural parameters of treated patients.** SARS-CoV-2 infection was assessed by real-time reverse transcriptase-polymerase chain reaction (rRT-PCR) testing positive (★) or negative (✪). Reference laboratory values for patient 1∗(C-reactive protein <1.00; WBC: 4.000–10.000: ALC: 900–4500 and glucose: 70–110) and patient 2∗∗ (C-reactive protein 0.00–5.00; WBC: 4.000–11.000: ALC: 1000–3700 and glucose: 70–110).

tests were compatible with COVID-19 infection (Fig. 1) [4,5]. The local protocol for COVID-19 infection was activated, and the patient was treated with oral azothromycin, darunavir/ritonavir, hydroxychloroquine and oxygen therapy. On March 24, lymphocyte count reached the nadir (i.e., 650×10^{-9}U/L), and on April 2, the patient was discharged being asymptomatic, with normal blood values, and with two subsequent swabs testing negative for SARS-CoV-2 infection (Fig. 1). Being cured from COVID-19 infection ICI therapy will be reactivated.

On March 18, an asymptomatic, 51-years-old female, ECOG PS0, receiving adjuvant therapy for a locally advanced cutaneous melanoma surgically removed on July 2019 (patient 2), was admitted to our outpatient clinic with normal clinical and bio-humoural parameters to receive her 11th cycle of an anti–PD-1 mAb. Noteworthy, being the patient an MD, she had tested negative for SARS-CoV-2 infection on March 11 following a professional exposure to COVID-19. On March 19, the patient called our clinic referring asthenia, nausea, fever >38.0 °C, headache and oxygen saturation of 98%. Owing to the persistence of the clinical symptoms, on March 25 naso-pharyngeal and oropharyngeal swabs were performed, confirming SARS-CoV-2 infection (Fig. 1). Owing to the mildness of referred symptoms, and in accordance with the local protocol, the patient did not receive treatment for COVID-19 infection and was quarantined at home. On March 30, she referred improvement of clinical symptoms, while bio-humoural parameters normalized on April 3 (Fig. 1). Two subsequent swabs tested negative on April 3 and 4 for SARS-CoV-2 infection (Fig. 1); thus, the patient was considered cured from COVID-19 and she will resume ICI therapy shortly.

These two cases are representative of potential clinical scenarios with whom oncologists can be faced in their daily practice due to the COVID-19 pandemic. Undoubtedly, no general conclusion can be drawn from the positive outcome of these two patients on the reciprocal interplay between ICI therapy and SARS-CoV-2 infection. Nevertheless, these findings seem to suggest that treatment with ICI is a doable approach during the COVID-19 pandemic, and that SARS-CoV-2 infection does not seem to represent an obstacle to grant patients with cancer the best treatment in accordance with their clinical setting.

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Conflict of interest statement

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References

[1] Calabrò L, Peters S, Soria JC, et al. Challenges in lung cancer therapy during the COVID-19 pandemic. Lancet Resp Med 2020. https://doi.org/10.1016/S2213-2600(20)30170-3.

[2] Emanuel EJ, Persad G, Upshur R, et al. Fair allocation of scarce medical resources in the time of covid-19. N Engl J Med 2020. https://doi.org/10.1056/NEJMsb2005114.

[3] Ueda M, Martins R, Hendrie PC, et al. Managing cancer care during the COVID-19 pandemic: agility and collaboration toward a common goal. J Natl Canc Netw 2020;20:1–4.

[4] Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med 2020;382:727–33.

[5] Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet 2020;395(10223):507–13.