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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Editorial

Exploration of potential risk factors for COVID-19 severity in patients participating in oncology clinical trials

Coronavirus disease 2019 (COVID-19) has created the greatest threat to global health worldwide [1]. Several studies have claimed that cancer patients are highly susceptible to COVID-19 [2–4]. Various studies stated that comorbidities were associated with increased mortality in COVID-19 [5,6]. There is currently no promising guidance for conducting oncology clinical trials during the COVID-19 pandemic. Additionally, factors associated with the severity of COVID-19 could hamper the results of clinical trials. Therefore, our goal was to investigate potential risk factors for COVID-19 severity in patients participating in clinical cancer trials.

Senescent cells secrete a set of pro-inflammatory factors collectively called the senescence-associated secretory phenotype (SASP) [7]. The SASP includes several pro-inflammatory molecules, including TNF-α, IL-1α/β, IL-6, IL-8, and chemokines (Ccl2, Cxcl10 and Ccl17) [8,9]. The SASP is considered a double-edged sword [10]. Short-term exposure to SASP can aid wound healing, which is crucial to the response to acute cell damage [11]. Conversely, long-term exposure to SASP can lead to damage to immune cells, triggering chronic inflammatory disease [12]. Several studies have claimed that cellular senescence is associated with the severity of COVID-19 in cancer patients [13–15]. Therefore, the cellular senescence status should be evaluated in patients participating in oncology clinical trials during the COVID-19 pandemic.

Due to the development of chemoresistance, cancer cells can still evade chemotherapy, which is a major barrier to cancer treatment [16]. Additionally, chemoresistance can increase metastasis, which makes it challenging to improve the clinical outcomes of cancer patients [17]. Preliminary studies have reported that chemoresistance is associated with the severity of COVID-19 in cancer patients [18,19]. Therefore, the chemoresistance status of cancer patients participating in clinical trials should be assessed during the COVID-19 pandemic.

COVID-19 targets the lungs; thus, patients with COVID-19 can develop various lung diseases, including chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, moderate to severe asthma, and lung cancer [20]. On the other hand, several studies have stated that many types of heart disease, including coronary artery disease, cardiomyopathy, pulmonary hypertension, and congenital heart disease, are associated with the severity of COVID-19 in cancer patients [21–23]. Additionally, many studies have claimed that type 1 or type 2 diabetes could increase the complications of COVID-19 [24–26]. In addition, the type of clinical studies (screening/prevention, phases of trials) and kinds of treatment (cytotoxic chemotherapy, targeted therapy, immunotherapy, surgery, radiation) should be considered for clinical evaluation [27]. Taken together, the factors mentioned above should be evaluated for patients participating in oncology clinical trials during the COVID-19 pandemic.

Cytokines are a group of polypeptide signaling molecules that are essential for many biological processes [28]. However, several studies have claimed that elevated levels of cytokines and chemokines, such as IL-6, IL-2, IL-8, IL-4, IFN-γ, CSF, VEGF, HGF, IP-10, MCP-1, and MIP 1-α are associated with complications of COVID-19 [28–30]. Elevated cytokines could be related to unsuitable inflammatory responses, triggering weak and inappropriate immune responses that need to be studied further for full clarification [31]. Therefore, to explain the potential impact of elevated cytokine levels in clinical trials during the COVID-19 pandemic, cytokine levels need to be effectively measured and characterized for patients participating in oncology clinical trials.

Rather than using an experimental agent, it is necessary to consider an approved COVID-19 vaccine for cancer patients participating in clinical studies. In addition, the dates of the first and second dose and possible side effects should be recorded. These data may help to evaluate the efficacy and safety of the COVID-19 vaccine and the potential impact of the vaccine in oncology clinical trials.

In conclusion, COVID-19 has placed a burden on health systems around the world. Unfortunately, there are still no promising guidelines for conducting clinical trials involving cancer patients during the COVID-19 pandemic. Furthermore, many unknown factors could hamper the results of clinical trials, which need to be studied. Due to the COVID-19 pandemic, few preclinical and clinical data are available, but there will be greater efforts to establish a promising guideline for conducting oncology clinical trials during the COVID-19 pandemic. Therefore, we anticipate that the factors associated with the severity of COVID-19 that we explored in the present study could help establish proper guidance for oncology clinical trials.

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Declaration of competing interest

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