



# Lymphopenia that may develop in patients treated with temozolomide and immune control check-point inhibitor may be a high risk for mortality during the COVID-19 outbreak

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## Abstract

As we know more about the clinical and laboratory features of COVID-19, which is now accepted as a pandemic, many questions have been raised about how to manage and monitor the treatment of cancer patients. It was determined that the incidence of lymphopenia increased in COVID-19 and there was a significant relationship between lymphopenia and mortality. This can be thought of as an unresponsive problem in how to maintain anti-cancer drugs that cause lymphopenia. This article was written for a hypothetical approach in cancer patients diagnosed with COVID-19 in order to be an idea of collecting data for treatment with anti-cancer drugs that cause lymphopenia.

**Keywords** COVID- 19 · Lymphopenia · Mortality · Cancer patients

## To the Editor,

A virus-related infection picture called COVID-19, which is now accepted as a pandemic, has negatively affected social, economic, and educational life in all countries, and has become an important cause of death by threatening life [1]. After an atypical viral pneumonia case cluster in late 2019, a new coronavirus was reported from these cases in Wuhan, China in January 2020. With the developments that followed, this virus, called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was reported to cause a respiratory disease called COVID-19 in infected people [1]. In the light of the available data, although 81% of patients with COVID-19 had a mild disease, 14% had a serious illness

requiring hospitalization and additional oxygen, and the remaining 5% had respiratory failure, septic shock, and/or multi-organ dysfunction. Again, the information we obtained from all data, COVID-19 case death rates are around 2%, and it rises to 15% in patients aged 80 and over [1].

In this pandemic process, all eyes turned to cancer patients with advanced age and additional disease history due to the immune system suppression caused by cancer and/or cancer treatments [1]. All of Oncology Associations should quickly take precautions and measures about which of these patients are more risky, how to follow-up, and cancer treatment of which patient.

Based on results of Chinese National Data, patients with COVID-19 confirmed a disproportionately higher prevalence of cancer (especially lung cancer) compared to the general population. However, there is insufficient data on the incidence of COVID-19 in cancer patients compared to the general population. Based on the same data, it has been stated that there is a 5.6% case death rate among patients with cancer, but it is believed that many factors, including age, may affect this result [2].

Low lymphocyte count was reported to be associated with increased disease severity in COVID-19, and patients who died from COVID-19 had significantly lower lymphocyte counts than survivors. As a result, this lymphopenia is considered to be an important prognostic laboratory marker [2].

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It is known that lymphocytes, which are the main effector cells in the immune response against cancer, are one of the main components of the human immune system. Before treatment, lymphopenia was found to be a poor prognostic indicator in many cancers. Similarly, data obtained indicate the poor prognosis of lymphopenia developing due to treatment in non-small cell lung cancer, head and neck cancer, glioblastoma, and pancreatic cancer [3].

Therefore, it may be thought that the lymphopenia, which has low lymphocyte count before treatment or that occurs during treatment with temozolomide, immune-check point inhibitors, or other anti-cancer drugs, will also negatively affect the mortality with COVID-19. It can be emphasized that the effect of other anti-cancer drugs, especially temozolomide, on lymphocyte count should be a sensitive point in clinical oncology practice while confirming anti-cancer treatment.

While the pandemic process is ongoing, we will more clearly understand the clinical and treatment features of cancer patients affected by COVID-19, however, we may need to develop some hypotheses with what we know for better, accurate, and appropriate management of treatment. This article is written hypothetically to emphasize that cancer patients with risk of developing lymphopenia associated with anti-cancer drugs should be followed more carefully in terms of the risk and mortality of COVID-19 infection.

## Compliance with ethical standards

**Conflict of interest** The author declare that they have no conflict of interest.

**Ethical approval** We certify that all of our affiliations with or without financial involvement, within the past 5 years and foreseeable future and any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript are completely disclosed (e.g., employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, and royalties).

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