Press Release

SARS-CoV-2 antibody status in patients with cancer during the COVID-19 pandemic in Japan

June 2, 2021
National Cancer Center Japan
Sysmex Corporation
Japan Health Research Promotion Bureau (JH)

Outline

The National Cancer Center Japan (President: Hitoshi Nakagama, Location: Chuo-ku, Tokyo, Japan, hereinafter “National Cancer Center”) and Sysmex Corporation (Chairman and CEO: Hisashi Ietsugu; HQ: Kobe, Japan, hereinafter “Sysmex”) conducted a cross-sectional study from August to October 2020 to evaluate the seroprevalence of SARS-CoV-2 and the antibody levels of 500 patients with cancer and 1,190 healthy subjects.

The result indicated that the seroprevalence was low in patients with cancer and healthy subjects without a history of COVID-19, and there was no difference between the two groups. On the other hand, antibody levels were lower in patients with cancer than in healthy subjects. Even after adjusting for factors such as age, sex, complications, and smoking history, a significant difference was observed. Furthermore, antibody levels in patients receiving cytotoxic chemotherapy[1] were significantly lower than those who did not receive it. In contrast, antibody levels in patients receiving immune checkpoint inhibitors[2] were significantly higher than in those who did not receive it. These results suggest antibody levels may be affected by comorbid cancer and cancer treatments.

This study was published on the online version of JAMA Oncology (May 28, 2021).
(URL: https://jamanetwork.com/journals/jamaoncology/fullarticle/2780583)
This study was supported by the Japan Health Research Promotion Bureau (JH).

Interpretations and considerations of the study results

- As seroprevalence is low even in patients with cancer who are considered to be at high risk of infection, it is indicated that infection control has been sufficient, and that asymptomatic infection is not high.
- Although this study indicated that the antibody levels are lower in patients with cancer than in healthy subjects, it is unknown whether the difference in antibody levels affects subsequent risks of infection or severe disease.

- In this study, health care workers in the National Cancer Center Japan participated as healthy subjects. However, some of them were engaged in treating COVID-19 patients. Therefore, their antibody levels might be higher than those of healthy people in the general population, which requires careful consideration in interpreting the results.
- In patients with cancer, there was a difference in antibody levels between patients who had received or not received cytotoxic chemotherapy or immune checkpoint inhibitors, suggesting that systemic cancer therapies may influence the production of SARS-CoV-2 antibodies.
- However, there is no need to change the current systemic cancer treatments based on the results of this study.

Future prospects

To evaluate the effect of vaccinations in cancer patients, we will conduct a further study to examine the immune response after vaccination, and to clarify the relationship between systemic cancer therapies and SARS-CoV-2 antibody production.

Presentation of papers

Journal: JAMA Oncology

Title: Difference in SARS-CoV-2 antibody status between patients with cancer and health care workers during the COVID-19 pandemic in Japan

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Sysmex Corporation, joint research funding

Japan Health Research Promotion Bureau (JH)

The Japan Health Research Promotion Bureau (JH) was launched in April 2020 as a cross-functional organization that straddles the boundaries of Japan's six national centers for advanced and specialized medicine (national centers: NCs). Its purpose is to create innovation with an eye toward world-leading R&D and medical care by integrating and coordinating resources and information of the six NCs, and by promoting organic and functional cooperation and collaboration while taking full advantage of the expertise and experience that individual centers have cultivated

so far.
https://www.japanhealth.jp/en/index.html

Sysmex's efforts regarding COVID-19

As a manufacturer of clinical testing instruments and reagents, Sysmex supports ongoing clinical testing conducted in healthcare settings around the world. We believe it is our mission to work alongside healthcare professionals to do everything in our power to prevent the spread of COVID-19 and overcome this crisis. To this end, we are doing our utmost to ensure a stable supply of products and services. Furthermore, we are engaged in initiatives to help prevent COVID-19 from spreading, and to allow conditions to return to normal as quickly as possible. On this front, we have obtained the first regulatory approval in Japan for a novel coronavirus testing kit (RT-PCR method). We are leading Japan in collaboration between industry and the public sector (the city of Kobe) to enhance the PCR testing system. In addition, we are working proactively to develop new diagnostic technologies.

The antibody detection reagent used in this study enables quantitative measurement of two classes of antibodies (IgG, IgM) that react specifically with SARS-CoV-2 N antigen and S antigen and has excellent discriminability. We have reported in the joint study with the National Cancer Center, etc. that the agent can be utilized in a wide range of epidemiological studies and applied in clinical settings such as the monitoring of vaccine effects.

https://www.sysmex.co.jp/en/COVID19.html
https://www.ncc.go.jp/en/information/press_release/20200703/index.html
Presented papers:
Noda K. et al. Sci Rep. 2021 Mar 4;11(1):5198. doi: 10.1038/s41598-021-84387-3.

Terminology

1. Cytotoxic chemotherapy
Anticancer drugs that kill cells, especially cancer cells.
(Cited from NCI Dictionaries the National Cancer Institute:
https://www.cancer.gov/publications/dictionaries/cancer-terms/def/cytotoxic-chemotherapy)

2. Immune checkpoint inhibitor
A type of drug that blocks proteins called checkpoints that are made by some types of immune system cells, such as T cells, and some cancer cells. These checkpoints help keep immune responses from being too strong and sometimes can keep T cells from killing cancer cells. When these checkpoints are blocked, T cells can kill cancer cells better. Examples of checkpoint proteins found on T cells or cancer cells include PD-1/PD-L1 and CTLA-4/B7-1/B7-2. Some immune checkpoint inhibitors are used to treat cancer.
(Cited from NCI Dictionaries the National Cancer Institute:

https://www.cancer.gov/publications/dictionaries/cancer-terms/def/immune-checkpoint-inhibitor)

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