

## COVID-19 Screening of Breast Cancer Patients During Treatment: A Single Center Experience in Japan

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**Abstract.** *Background/Aim: Breast cancer treatment mainly involves interventional methods such as surgical resection and chemotherapy. How to best perform these treatments during the COVID-19 pandemic remains to be established. Patients and Methods: Patients with breast cancer who received SARS-CoV-2 PCR screening before cancer treatment from December 2020 to April 2021 were included. PCR screening was performed within 72 hours of the scheduled admission time and treatment. Results: A total of 19 tests in 15 patients were analysed. Fourteen cases displayed no symptoms, and five cases had some symptoms. COVID PCR tests were negative in all cases. Conclusion: COVID-19 screening can ensure that breast cancer patients do not miss scheduled treatments as a result of the pandemic. Diagnosis of patients with symptoms that are shared by COVID-19 infection, chemotherapy, and breast cancer recurrence must be performed carefully.*

Since SARS-CoV2 disease (COVID-19) was first reported in Wuhan, China (1), it has spread worldwide. In Japan, there have been over 750,000 COVID-19 cases and >10,000 COVID-associated deaths. Our hospital is located in Aichi prefecture, which has the 4th highest patient population in Japan. Due to the pandemic, there was a critical need to

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*Key Words:* COVID-19, PCR screening, breast cancer.

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prevent hospital spread of COVID infection among both patients and medical staff. Our hospital started PCR screening of patients before emergency admission on November 8, 2020 and before scheduled admission on December 1, 2020.

Breast cancer treatment mainly consists of surgical resection, chemotherapy, and radiotherapy. Both surgery and chemotherapy are types of interventional treatment. Although there is some guidance regarding breast cancer management during the COVID-19 pandemic [for example from ASCO (2), The American Society of Breast Surgeons (3), ESMO (4), the Japan Surgical Society (5), and Japanese Breast Cancer Society (6)], how we should perform these treatments during COVID-19 pandemic remains to be established. To provide clarification, we planned the current retrospective clinical study leveraging the PCR screening data to gain insight into breast cancer treatment during the COVID-19 pandemic.

### Patients and Methods

We included breast cancer patients who received PCR screening or a COVID-19 antigen test during treatment from December 2020 to April 2021. PCR screening was performed within 72 hours from scheduled admission, and in case of emergency admission the screening was performed at that time. Patients selected for surgery came into the hospital one day before the day of their operation, whereas patients receiving new chemotherapy regimens came into the hospital on the first day. Patients with few specific symptoms were tested for COVID-19 via PCR screening, whereas those with more general cold-like symptoms that are sometimes associated with COVID-19 infection underwent testing for COVID-19 antigen. At the same time, we measured the patients' body temperatures and consulted the results of medical interviews according to a check list (screening cases: high fever, cough, headache, general fatigue, dysgeusia, hyposmia; suspected disease: high fever, cough, acute respiratory symptoms, pneumonia, acute respiratory distress syndrome, multiple organ failure, general fatigue, headache, nausea, vomiting, diarrhoea, conjunctivitis, hyposmia, dysgeusia). Clinical information was collected from the patients' medical charts. This was a retrospective study and was approved by the Tokushukai Group Ethics Committee (#TGE01719-016).

**Results**

Fifteen patients were included in this study. Four patients were examined twice, giving rise to a total of 19 tests for analysis. Of these, 14 cases had early breast cancer and five had advanced or metastatic breast cancer. The mean age was 63.8 years (range=34-83 years). Seven cases underwent surgery, 10 received chemotherapy, and two were admitted into hospital as an emergency. Of the patients given chemotherapy, three received adriamycin and cyclophosphamide (AC) or dose dense (dd) AC, three received weekly paclitaxel (wPTX), three received bevacizumab (Bev) + PTX, and one received trastuzumab emtansine (T-DM1) (Table I). Three cases given AC or ddAC also received pegylated granulocyte colony stimulating factor (PEG-GCSF) on day 3.

Mean body temperature was 36.6°C (range=35.7-37.4°C). Sixteen cases were indicated for screening, and 3 were suspected of having COVID-19. Eighteen cases were tested by PCR, and two by an antigen test. Fourteen cases had no symptoms, two cases had low grade fever (37.4°C), two had dysgeusia, and one had respiratory discomfort and cough. However, all cases were diagnosed as COVID-19 negative (Table II).

**Discussion**

The main purpose when SARS-CoV-2 screening was started, was to prevent hospital spread of COVID-19 infection. Fortunately, no spread of infection has occurred in our hospital to date. However, as practising oncologists, we were concerned about the impact of COVID-19 on cancer treatment. A previous report regarding cancer care during the pandemic recommended that anticancer drug treatment should be suspended if a patient is found to be SARS-CoV-2-positive (7). Furthermore, the authors of that report recommended that a request for a review to start or continue treatment of SARS-CoV-2-positive patients should be considered in the context of medical necessity. In addition, a significantly greater number of sentinel lymph nodes positive for cancer was identified during the COVID-19 outbreak (8, 9). Our screening results have allowed us to avoid suspension of treatment as none of our patients was positive. We suggest that screening in this context can help to ensure that breast cancer treatment can proceed as normal wherever possible, even during the pandemic.

During this study, we noticed that symptoms of COVID-19 infection, metastatic breast cancer and the side effects of chemotherapy were similar. Physicians must therefore be rigorous during diagnosis to ensure that truly SARS-CoV-2-positive patients are identified and managed appropriately. Dysgeusia and respiratory symptoms can occur in both breast cancer and COVID, thus doctors must make diagnoses carefully.

Table I. Patient characteristics.

Tests	n=19*
Age	63.8 years (range=34-83 years)
Disease status	
Early	14 (73.7%)
Advanced/recurrent	5 (26.3%)
Treatment	
Surgery	7 (36.8%)
Chemotherapy	10 (52.6%)
Emergency admission	2 (10.5%)
Chemotherapy regimen	
AC, ddAC	3** (15.8%)
wPTX	3 (15.8%)
Bev+PTX	3 (15.8%)
T-DM1	1 (5.3%)

\*4 patients tested twice; \*\*using PEG-GCSF on day 3 in cases of AC and ddAC. AC: Adriamycin, cyclophosphamide; dd: dose dense; wPTX: weekly paclitaxel; Bev: bevacizumab; T-DM1: trastuzumab emtansine; PEG-GCSF: pegylated granulocyte colony stimulating factor.

Table II. Summary of test results.

Tests	n=19
Body temperature	36.6°C (range=35.7-37.4)
Test situation	
Screening	16 (84.2%)
Suspected disease	3 (15.8%)
Test type	
PCR	18 (94.7%)
Antigen	2* (10.5%)
Symptoms	
None	14 (73.7%)
Low fever (37.4°C)	2 (10.5%)
Dysgeusia	2 (10.5%)
Respiratory discomfort/cough	1 (5.3%)
Test result (PCR and Antigen combined)	
Positive	0 (0%)
Negative	19 (100%)

\*One patient had both PCR and antigen tests.

A limitation of this study is that it took place at only one institute, where less than 20 cases were analysed. In addition, there were no SARS-CoV-2-positive breast cancer patients that could be used as a control case group. Increasing the study size and/or including SARS-CoV-2-positive patients may provide more insights into this issue.

In our country and our prefecture, it appears that complete control of COVID-19 is still a long way off. Mass vaccination should facilitate the transition out of the pandemic and allow us to live with the virus. Until then, great attention must be paid to the management of breast

cancer treatment, and further studies should be performed to increase the efficiency of breast cancer treatment during the COVID-19 pandemic.

### Conflicts of Interest

The Authors report no conflicts of interest in relation to this study.

### Authors' Contributions

Research design: Yoshimoto N; collection and analysis of data: Yoshimoto N; all Authors read and approved the final article.

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*Received August 20, 2021*  
*Revised September 20, 2021*  
*Accepted September 22, 2021*