

Shortcomings of telemedicine and importance of uninterrupted cancer care during the COVID-19 pandemic: A case report of advanced breast cancer in Fukushima, Japan

Akihiko Ozaki¹, Yudai Kaneda², Yuki Senoo¹, Masahiro Wada¹, Tomohiro Kurokawa¹, Toyoaki Sawano¹, Masaharu Tsubokura³, Tetsuya Tanimoto¹, Yoshiaki Kanemoto¹, Tomozo Ejiri¹, and Norio Kanzaki¹

¹Jyoban Hospital of Tokiwa Foundation

²Hokkaido University

³Fukushima Medical University School of Medicine

October 24, 2021

Abstract

We experienced an advanced breast cancer patient who failed to receive diagnostic imaging despite regular video conferences with her physician during the COVID-19 pandemic, resulting in delayed liver metastasis detection. Recognizing shortcomings of telemedicine and collaboration among medical institutions for uninterrupted cancer care is imperative during the pandemic.

Shortcomings of telemedicine and importance of uninterrupted cancer care during the COVID-19 pandemic: A case report of advanced breast cancer in Fukushima, Japan

Authors:

Akihiko Ozaki¹, Yudai Kaneda², Yuki Senoo¹, Masahiro Wada^{1,3}, Tomohiro Kurokawa⁴, Toyoaki Sawano^{4,5}, Masaharu Tsubokura⁵, Tetsuya Tanimoto⁶, Yoshiaki Kanemoto⁴, Tomozo Ejiri⁴, Norio Kanzaki⁴

Affiliations:

1 Department of Breast Surgery, Jyoban Hospital of Tokiwa Foundation, Iwaki, Fukushima, Japan

2 School of Medicine, Hokkaido University, Sapporo, Hokkaido, Japan

3 Department of Breast Surgery, Sano Kosei General Hospital, Sano, Tochigi, Japan

4 Department of Surgery, Jyoban Hospital of Tokiwa Foundation, Iwaki, Fukushima, Japan

5 Department of Radiation Health Management, Fukushima Medical University School of Medicine, Iwaki, Fukushima, Japan

7 Department of Internal Medicine, Jyoban Hospital of Tokiwa Foundation, Iwaki, Fukushima, Japan

Corresponding author:

Akihiko Ozaki, MD, PhD

Department of Breast Surgery, Jyoban Hospital of Tokiwa Foundation, 57 Kaminodai, Jyoban-Kamiyuna-Yamachi, Iwaki, Fukushima, Japan.

Email address: aozaki-ty@umin.ac.jp.

Telephone: 81-244-22-3181

Fax: 81-244-22—8853

Funding: None available

The patient consent statement : A written consent has been obtained before submission and be made available to the publisher if requested.

Authorship statement: Akihiko Ozaki, Yudai Kaneda, and Yuki Senoo wrote the manuscript. Other authors made substantial contributions to the designing of the study and critical revision of the manuscript.

Conflicts of interest statement : Akihiko Ozaki receives personal fees from MNES Inc, outside the submitted work. Also, Tetsuya Tanimoto receives personal fees from MNES Inc, and Bionics co., ltd. outside the submitted work.

Key clinical message:

Little is known about disadvantages of remote cancer care. This case shows that telemedicine should not be thoughtlessly indicated as a major medical provision strategy especially for patients with metastatic cancer or progressive diseases.

Abstract:

We experienced an advanced breast cancer patient who failed to receive diagnostic imaging despite regular video conferences with her physician during the COVID-19 pandemic, resulting in delayed liver metastasis detection. Recognizing shortcomings of telemedicine and collaboration among medical institutions for uninterrupted cancer care is imperative during the pandemic.

Keywords:

Breast Neoplasms; Telemedicine; COVID-19; Accessibility of health services; Referral and Consultation

Introduction:

Patients with breast cancer should make regular hospital visits throughout the course of their treatment. This is especially important for patients with recurrence or metastasis because their condition can rapidly worsen, and the clinical course and prognosis vary considerably from patient to patient.¹ Therefore, to provide therapeutic interventions in a timely manner, it is necessary to periodically review and assess the imaging diagnosis.

However, the novel coronavirus diseases 2019 (COVID-19) pandemic has rapidly changed the situation of breast cancer treatment, and this is no exception in Japan. Since the initial cases were detected in Japan in March 2020, some hospitals in urban areas have restricted visits of patients, especially those living in other prefectures, as a measure against infection.² In addition, some patients refrained from visiting hospitals to avoid possible contact with COVID-19 patients.³

As one of solutions, some hospitals have started to provide telemedicine and drug prescriptions for patients who cannot visit hospitals for various reasons, which was not widely utilized before in Japan.⁴ In fact, there has been a rapid increase in remote video consultations for patients with various diseases, such as cancer.⁵ However, the disadvantages of such remote cancer care have not yet been sufficiently clarified, especially in patients with advanced breast cancer.

In this case report, we present a woman with advanced breast cancer who received routine remote video consultations but unable to have medical imaging during the COVID-19 pandemic, resulting in delayed detection of her liver metastasis.

Case presentation:

A 50-year-old woman was diagnosed with breast cancer with bone metastasis at a medical institution in her home town, Iwaki City, Fukushima Prefecture, Japan in January 2016. In February 2016, she was referred to a university hospital in Tokyo, Japan, which is approximately 200 km apart from Iwaki City. There, she received hormone therapy with exemestane and goserelin, and treatment for bone metastases with denosumab. Because of the worsening local control, the patient received the mastectomy and axilla dissection in June 2019. In April 2020 she had an enhanced computed tomography (CT), and the results revealed no signs of exacerbation. After that, due to the increasing number of COVID-19 cases in Japan, she could not visit the university hospital in Tokyo from Fukushima.

Instead, she began to receive remote video consultations of the university hospital and were prescribed medications regularly. In this period, treatment with denosumab and goserelin was interrupted, and she and the attending doctor had been looking for a medical institution near her home where she could have regular imaging exams, but six months had passed without finding one.

In November 2020, she was firstly referred to our hospital. She had some mild symptoms with Eastern Cooperative Oncology Group Performance Status of 1 just before visiting our hospital. We detected elevated CA15-3 of 87.2 and CEA of 7.6, and subsequent positron emission tomography revealed multiple liver metastases that had not been previously detected by her previous doctor 7 months ago. She soon started chemotherapy at our hospital with paclitaxel and bevacizumab and restarted denosumab, and as of October 2021, her liver metastases have kept shrunk, fortunately.

Discussion:

This case illustrates the limitations of remote video consultations for cancer during the COVID-19 pandemic, although telemedicine attracts wide attention with enthusiastic endorsement by the Japanese government and the information technology industry. Without finding a nearby collaborating hospitals that can provide necessary examinations and treatments when they are required, telemedicine should not be thoughtlessly indicated as a major medical provision strategy especially for patients with metastatic cancer or progressive diseases.⁶

In general, post-operative surveillance for early-stage breast cancer patients include annual mammography and other adjunctive medical examinations, such as ultrasonography and CT.⁷ On the other hand, for breast cancer patients with metastasis or recurrence, serum tumor marker tests and other imaging tests are recommended every few months, depending on patients' conditions.⁸

In our case, the university doctor in charge understood the importance of performing a CT immediately considering the patient's condition, and she also made an effort to find a nearby hospital. However, it eventually took seven months until she could visit our hospital, probably due to the nationwide confusion of medical institutions brought by the pandemic and scarcity of specialty physicians and hospitals in rural areas like Fukushima. While the importance of collaborations between medical institutions have been well understood both in general and medical communities, the current COVID-19 pandemic has been reiterating its importance since it has become increasingly difficult to find a referring hospital now that lots of hospitals are overburdened by the COVID-19 pandemic and or restricts acceptance of new patients as its countermeasures. If the patient or the doctor could have found a medical institution much earlier, her metastasis might have been detected at a smaller stage.

Considering that the COVID-19 pandemic is occurring intermittently in Japan, it is necessary not only to rely on the introduction of novel telemedicine technology but also to reform and adjust the traditional referral system for medical institutions suitable for the post-pandemic era, especially between urban and rural areas. Telemedicine can be a useful option, but simultaneously, patients who have been receiving treatment at hospitals in urban areas should be able to continue their treatment in rural areas even when it becomes difficult for them to visit hospitals in urban areas.⁹

Therefore, it is important for medical institutions to take this opportunity to recognize the advantages and disadvantages of telemedicine. In general, a remote video consultation is an effective method such as for

patients with skin diseases that can be detected visually, or to control a patient's blood pressure.¹⁰ However, as in this case, the indication of telemedicine for patients requiring specialized diagnostic imaging on a regular basis is still limited, and it is important to understand its limitations before selecting suitable patients.

In conclusion, this case report demonstrates that telemedicine cannot fully complement medical care for patients with breast cancer metastasis due to limited access to the medical institutions during the COVID-19 pandemic. In order to provide telemedicine effectively, it is very important to encourage both patients and medical professionals to collaborate with other medical institutions, for securing referral hospitals and providing highly specialized treatments.

References

1. Loibl S, Poortmans P, Morrow M, Denkert C, Curigiano G. Breast cancer. *Lancet*. 2021;397(10286):1750-1769.
2. Syed A, Kumari G, Kapoor A, et al. Impact of COVID-19 On Breast Cancer Management: A Radiological Perspective from A Tertiary Centre. *Eur J Breast Health*. 2021;17(2):180-187.
3. Ozaki A, Sawano T, Saito H, Tanimoto T, Tsubokura M. Will initial consultation patterns among undiagnosed cancer patients be the same after this COVID-19 pandemic? Experiences from the 2011 triple disaster in Fukushima, Japan. *J Glob Health*. 2020;10(2):020343.
4. Bokolo Anthony J. Use of Telemedicine and Virtual Care for Remote Treatment in Response to COVID-19 Pandemic. *J Med Syst*. 2020;44(7):132.
5. Ozaki A, Tachibana K, Ohtake T. Challenges and future directions in breast cancer care in Fukushima prefecture in Japan: correspondence to "A survey on the current status of clinical resources for diagnosis and treatment of breast cancer in rural hospitals of the Tohoku region in Japan". *Breast Cancer*. 2021;28(5):1163-1164.
6. Fouquet SD, Miranda AT. Asking the Right Questions-Human Factors Considerations for Telemedicine Design. *Curr Allergy Asthma Rep*. 2020;20(11):66.
7. Khatcheressian JL, Wolff AC, Smith TJ, et al. American Society of Clinical Oncology 2006 update of the breast cancer follow-up and management guidelines in the adjuvant setting. *J Clin Oncol*. 2006;24(31):5091-5097.
8. Stuart K, Brennan M, French J, Houssami N, Boyages J. Life after breast cancer. *Aust Fam Physician*. 2006;35(4):219-224.
9. Chen Z, Sun S, Zhao W, et al. The Impact of the Declaration of the State of Emergency on the Spread of COVID-19: A Modeling Analysis. *Comput Math Methods Med*. 2021;2021:8873059.
10. Ekeland AG, Bowes A, Flottorp S. Effectiveness of telemedicine: a systematic review of reviews. *Int J Med Inform*. 2010;79(11):736-771.