

Impact of coronavirus disease 2019 on the clinical diagnosis and treatment of breast cancer in China

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To the Editor: Since December 2019, the epidemic of coronavirus disease 2019 (COVID-19) has become the focus of attention in China and worldwide. Despite the effective control of the outbreak in China, the global situation of COVID-19 was not optimistic which has gradually become a global threat of the year 2020. COVID-19 may cause high mortality in the elderly and patients with cardiovascular diseases, malignant tumors, and other underlying diseases.^[1] Breast cancer is the main cause of death from cancer in women.^[2] Patients who are diagnosed with breast cancer often have low immunity and need to undergo long-term anti-tumor treatment. Therefore, this population may have a high risk of COVID-19 infection and death. In addition, during the COVID-19 epidemic, tumor patients cannot go to the hospital in time for the diagnosis and treatment as a result of traffic control and the high risk of hospital infection, which might lead to adverse effects on prognosis.

To explore the impact of COVID-19 epidemic on the treatment of breast cancer patients, we conducted a questionnaire survey on the clinical diagnosis and treatment of breast cancer during the epidemic among Chinese breast cancer clinicians. This study was strongly supported by the Breast Cancer Group of Chinese Association for Clinical Oncologist. The questionnaire was designed by the research team from Cancer Hospital, Chinese Academy of Medical Sciences and Peking University Cancer Hospital which contained a total of 55 questions (the questionnaire in English showed in Supplementary Materials, <http://links.lww.com/CM9/A480>). The participating clinicians should fill in according to the local actual solutions during the peak period of the Chinese epidemic from January to February. We distrib-

uted a total of 100 questionnaires to the public platform of association members on March 19, 2020. All the members chose to accept or reject the questionnaire on a voluntary basis. Submitting completed questionnaires before March 23, 2020 was considered as consent to participate in this questionnaire survey. All returned questionnaires were sorted and analyzed by two investigators independently. The questionnaires with incomplete answers were excluded. Two statisticians analyzed the results of the questionnaires anonymously. The enumeration data were expressed as percentage (%). All data were analyzed using Stata 15.0. The study was conducted in accordance with the *Declaration of Helsinki* and the Harmonized Tripartite Guideline for Good Clinical Practice from the International Conference on Harmonization. This study has applied for an exemption from the Medical Ethics Committee of Cancer Hospital Chinese Academy of Medical Sciences.

Until March 23, 2020, a total of 86 clinicians voluntarily submitted their questionnaires via email, of which 83/86 (96.5%) were complete and valid. The 83 breast cancer clinicians were from 72 different medical institutions covering about 85.3% areas of China. The personal information of the participants was showed in Table 1. The epidemic prevention measures led to an unprecedented impact on the normal medical order. The number of outpatients, the frequency of outpatient visits of doctors, the number of patients in wards and the number of surgery operations decreased by 80.3%, 50.0%, 70.6%, and 75.0%, respectively since the epidemic [Supplementary Figure 1A, <http://links.lww.com/CM9/A480>] and 76.8% of the operations were emergency operations. Since the outbreak of the epidemic, 51/83 (61.4%) of the breast cancer clinicians created online consultation platforms and

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Table 1: Basic information of the participating clinicians, *n*

Items	Physicians of breast cancer (<i>n</i> = 43)	Surgeons of breast cancer (<i>n</i> = 40)
Sex		
Male	13	29
Female	30	11
Age (years)		
30 ≤ <i>y</i> < 40	5	6
40 ≤ <i>y</i> < 50	25	16
50 ≤ <i>y</i> < 60	13	18
Title		
Chief physician	26	25
Associate chief physician	14	13
Physician in charge	3	2

30/83(36.1%) of clinicians used telephone and WeChat to follow up the patients.

This questionnaire survey mainly focused on the impact on the treatment strategies of Chinese breast cancer clinicians during the COVID-19 epidemic. The main changes of diagnosis and surgical treatment during the epidemic were shown in Supplementary Table 1A, <http://links.lww.com/CM9/A480>. For patients with breast tumors (≥ 3 cm) with axillary lymph node metastasis, 83/83 (100%) of the clinicians deemed it necessary to confirm the molecular typing of tumors and then select neoadjuvant chemotherapy. In addition, 39/40 (97.5%) surgeons did not conduct simultaneous breast reconstruction for those requiring secondary reconstructive surgery and 25/40 (62.5%) of surgeons used disposable isolation gowns, goggles, and double gloves for personal protection during the operation. In the case of breast cancer patients requiring neoadjuvant chemotherapy during the epidemic, 82/83 (98.8%) clinicians chose a 3-week regimen to reduce the number of patients going to hospital instead of 2-week regimen [Supplementary Table 1B, <http://links.lww.com/CM9/A480>]. For patients who had completed neoadjuvant therapy and needed further surgery, 55/68(80.9%) clinicians considered that a 1-month delay would not affect the efficacy and prognosis. For patients with post-operative adjuvant chemotherapy, 64/83 (77.1%) clinicians agreed to postpone the start of post-operative adjuvant therapy during the epidemic; however, the delay time of high- and low-risk patients should be differentiated [Supplementary Table 1C, <http://links.lww.com/CM9/A480>]. In addition, 75/83 (90.4%) clinicians used long-acting granulocyte-stimulating factors during the epidemic to prevent the occurrence of myelosuppression and the 3-month dosage of gonadotropin-releasing hormone agonist (GnRHa) replacing the 1-month dosage might become the main ovarian function suppression therapy during the epidemic (80/83 [96.4%] clinicians adopted the 3-month dosage). For patients requiring radiotherapy after completing post-operative adjuvant chemotherapy, 50/83 (60.2%) clinicians suggested that the radiotherapy could be delayed for 1 to 2 months as planned, during which endocrine or targeted therapy could be started first. The changes for advanced breast cancer treatment were shown

in Supplementary Table 1D, <http://links.lww.com/CM9/A480>. In this survey, 76/83 (91.6%) of clinicians considered CDK4/6 inhibitors as the most widely used hormone receptor (HR)-positive targeted therapy for advanced breast cancer. For patients with human epidermal growth factor receptor-2-positive advanced breast cancer completing 4 to 6 cycles of effective combination therapy, 68/83 (81.9%) clinicians suggested that chemotherapy can be stopped and oral anti-human epidermal growth factor receptor-2 targeting therapy can be used as the maintenance therapy. For patients with severe adverse reactions or weak physique, the clinicians agreed that “metronomic chemotherapy” could be used as a treatment mode to ensure the quality of life and the safety of home isolation.

In the questionnaire, we also learned that 73/83 (88%) of the breast cancer clinicians used Internet, WeChat, telephone, or the personal public account for publishing scientific articles to care for patients' mental health during the epidemic. 47/83 (56.6%) of medical institutions had a professional psychological consultation team [Supplementary Figure 1B, <http://links.lww.com/CM9/A480>]. In addition, 98% of regions in China have implemented the “Long prescription medicine” policy and 50% of regions had “Internet+” services incorporated into health insurance [Supplementary Figure 1C, <http://links.lww.com/CM9/A480>].

The questionnaire results could clearly summarize the changes to the diagnosis and treatment of breast cancer in China caused by the COVID-19 epidemic. Obviously, the outbreak of COVID-19 actually had a serious impact on the daily workload of breast cancer clinicians and resulted in changes to the working mode. In recent years, breast-conserving surgery has been recognized and accepted by more and more clinicians and patients.^[3] The epidemic also prompted breast cancer surgeons to shorten the operation time as much as possible, avoid total mastectomy, and choose selective reconstruction. Breast cancer physicians also strictly controlled the indications of intravenous chemotherapy, adjusted the treatment cycle, changed the way of administration during the COVID-19 epidemic. For triple negative breast cancer patients, although the neoadjuvant regimen containing both anthracycline and taxanes achieved high pathological complete remission and breast-conserving rates,^[4] more than half of the clinicians chose single-agent chemotherapy considering the adverse effects of the combined regimen during the epidemic. A total of 90.4% of clinicians chose long-acting granulocyte colony-stimulating factors to prevent the occurrence of myelosuppression and 96.4% of clinicians chose 3-month dosage GnRHa replacing the 1-month dosage to reduce the number of patients going out during the epidemic. In addition, the close attentions on patients' mental health and the policies such as “Internet +” medical insurance service and “Long prescription drugs” issued by Chinese government further ensured the treatment of breast cancer patients during the epidemic.

The study was supported by three breast cancer clinicians from Wuhan, Hubei fortunately. As the worst epidemic region in China, the treatment measures they took during

the epidemic were a little different from other regions in China. Based on the questionnaires, we found that the clinical work of them mainly used online clinic services to communicate with the patients. The frequency of online clinic was 7 times/week, which were more than the times of clinicians in other regions of China (3 times/week). All the elective surgeries were postponed in Wuhan and internal medical treatment was changed to home treatment administering oral drugs caused by blockade of community. All the treatments and diagnoses that needed to go to the hospital were forced to be postponed, but clinicians tried to relieve the anxiety of every breast cancer patient by phone or WeChat and found alternative treatments for them.

This questionnaire survey truly showed treatment decisions taken by Chinese breast cancer clinicians under the COVID-19 epidemic. The number of clinicians participating in this study is limited, and later follow-up is still needed to confirm the equivalence of some alternative treatments with standard therapies.^[5] However, timely adjustment of the treatment based on the change of epidemic could help breast cancer patients avoid the potential risk of COVID-19 infection. Taken together, the results of this survey provided practical evidences for the treatment of breast cancer in China under the epidemic, offered references for epidemic areas out of China and accumulated valuable experience to adjust tumor treatment strategies under such public health events in the future.

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Conflicts of interest

None.

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