



The Mass Infection of COVID-19 in Daegu City of Korea: Vascular Surgeons' Perspective

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Since February 18, 2020, the number of patients with COVID-19 has increased rapidly after the infection was initially confirmed in Daegu. Daegu city subsequently became the largest epicenter of the coronavirus outside China. In the early days of the outbreak of mass infection, Daegu citizens were in various difficult circumstances. Vascular surgery in Daegu was also affected as much as other medical field. Most of elective schedule were canceled, and the vascular surgeons cooperated to utilize the limited medical resources in Daegu region. Fortunately, the citizens of Daegu city could overcome the first crisis because of matured citizenship, sufficient medical resources and the timely-supplied surplus bed for patient isolation. Now all humanity today is interdependent and we are all one community in the pandemic. To overcome pandemic, it is necessary to respect and share experiences in various places at the beginning of the crisis.

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Coronavirus disease (COVID-19) was first reported in Wuhan, China, in late December 2019 [1-3]. A novel coronavirus, provisionally referred to as 2019 novel coronavirus and later named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was identified on January 12, 2020. On February 11, 2020, the World Health Organization (WHO) officially named the disease caused by the virus as COVID-19. The WHO declared the outbreak a Public Health Emergency of International Concern on January 30, 2020, and as a pandemic on March 11, 2020 [4].

South Korea faced a crisis early in this pandemic, when a 61-year-old woman with a fever attended several Shincheonji Church of Jesus events in the city of Daegu. After February 18, 2020, when the infection was initially confirmed in Daegu, the number of patients with COVID-19 increased rapidly. The area subsequently became the largest epicenter of the coronavirus outside of China. During the first wave of COVID-19 in Daegu (between February 18,

2020 and April 30, 2020), 6,933 people (about 0.3% of the city's population) were diagnosed with COVID-19. With the increased number of confirmed cases, many emergency departments were consecutively and repeatedly closed, and the medical staff on duty and inpatients were quarantined. Fortunately, the city of Daegu successfully flattened the curve, and South Korea became a world leader in COVID-19 pandemic response due to the dedication of medical staff and health officials, voluntary work, and cooperation of citizens. However, as of September 15, 2020, the number of confirmed cases (7,112) in the city of Daegu still comprises more than 30% of the total cases (22,391) in South Korea.

In the early days of the outbreak, the citizens of Daegu were put in various difficult circumstances. First, there were insufficient data on the consequences and spread of this infectious disease. Therefore, the guidelines on the quarantine periods of suspected and cured patients, criteria for release from quarantine, and extent to which confirmation

tests should be performed were not obvious. Second, the citizens of Daegu had to fight the prejudice and criticism of people in other regions. When mass infection broke out in Daegu, a city famous for its conservative political colors, several members of the mass media provided slightly biased reports. There was an opinion that Daegu City should be blocked off entirely as if the whole city was contaminated by COVID-19, and a phenomenon of banning contact with citizens of Daegu occurred nationwide in South Korea. There were also some reactions that seemed to demean all the citizens of Daegu by linking this crisis with political issues. Third, governmental support for social and economic losses caused by policies such as early closure, quarantine, and social distancing was very limited. In overcoming the crisis in Daegu, many volunteers, medical staff, and relief supplies from all over the country provided a lot of help. However, citizens of Daegu received little special or practical help from the government, amidst many uncertainties. Even adequate masks were not supplied to the citizens. Citizens had to endure this in hopes that the crisis would end.

The experiences of vascular surgeons in Korea facing the COVID-19 pandemic have been well described by Min [5]. Due to the COVID-19 crisis, vascular surgery in Daegu was also affected as much as other medical fields. Since confirmed patients were being treated in the intensive care units and isolation rooms of almost all university hospitals in Daegu, the practice of vascular surgeons was severely affected. Although there were no regulations or guidelines on clinical practice, most elective schedules were canceled by medical staff, except in cases of life-threatening or limb-threatening conditions, especially when an intensive care unit was needed. When unexpected cases of COVID-19 were confirmed in the emergency room or intensive care unit,

the space was temporarily closed. The vascular surgeons in the Daegu region then cooperated to transfer emergency patients to other hospitals where medical resources were available. The close ties among vascular surgeons in Daegu City played a crucial role in this special situation. Along with securing an intravenous route in confirmed patients who required intensive care, the role of vascular surgeons, who could perform necessary procedures at the bedside, was essential. Fortunately, despite the sudden epidemic in the Daegu–Gyeongbuk region, there was no gap between the medical demand and supply for emergency cases in the field of vascular surgery. From the end of April 2020, with the end of the first epidemic, the practice of elective vascular surgery procedures has gradually normalized in Daegu.

Many factors formed the basis for us to overcome the epidemic in Daegu. First, mature citizenship played a piv-



Fig. 2. Patients waited in front of the screening clinic prior to outpatient visits.



Fig. 1. Medical staffs prepared a screening clinic early in the morning.



Fig. 3. Employee cafeteria with temporary barriers on the tables to prevent the spread of the virus among employees.

otal role in overcoming the crisis in Daegu. The infection at a church meeting in Daegu was an unexpected event compared to the previous crises of SARS-CoV or Middle East Respiratory Syndrome (MERS). We were embarrassed and confused early in the crisis because this virus was completely new. There were questions about how many citizens this virus would kill or how quickly it would spread, and whether to trust the data from the city of Wuhan. Indeed, there was no definitive answer on how to conduct the vast number of tests we deemed necessary, or how to isolate test-positive patients from the society. However, we did not panic. City officials, medical staff, and above all, citizens slowly sought answers. As the tests that initially seemed impossible were carried out step by step, things that were initially unclear became gradually clearer. Citizens were patient enough to endure inconveniences, and visited screening clinics to undergo inconvenient tests (Fig. 1-3). Many public institutions and facilities were temporarily closed, and most social meetings were canceled. All public facilities underwent a thorough quarantine of visitors, and these measures forced citizens to experience great inconvenience. The citizens' behavior in enduring discomfort was certainly not just for their own safety. Despite such an unprecedented situation, the panic-buying phenomenon that occurred in other countries did not occur in Daegu. There was no large-scale closure, and all public transportation systems were in operation. Most of the functions of the city of Daegu were still in operation as before, except in some downtown areas. Citizens followed the quarantine instructions, action guidelines, and precautions delivered

by the health authorities without complaints. They were cooperative and tried to encourage the medical staff (Fig. 4, 5). Second, Daegu City's existing medical infrastructure played an important role. There are 12 hospitals of the size of a general hospital or larger, with excellent medical personnel, in Daegu. In particular, 4 university hospitals in Daegu city have traditionally played a great role in addressing the medical needs of the Daegu-Gyeongbuk area. Many medical professionals voluntarily participated in the hospital screening triage, and when colleagues were quarantined, they were replaced by other workers. Despite the rapid increase in medical demand over a short period of time, the gap between the medical demand and supply, which had been a concern, did not occur because of Daegu City's existing resources. Third, the abrupt need for extra beds to deal with sudden quarantine patients was managed in a timely manner. In the early period of the epidemic, measures to isolate confirmed patients from the society are crucial. It is a famous fact that a temporary hospital to accommodate patients was constructed within days in Wuhan, China. However, that building was not a qualified hospital, but rather a containment space similar to an isolation camp. In contrast, in Daegu city, Dongsan Hospital, which started from "Jejungwon" in 1899, was available because of its relocation to a new building last year. Surplus beds could be prepared without delay and additional costs. This old hospital originally had the capability to operate 1000 beds as a university hospital and is located in the center of Daegu city. Because of easy accessibility, existing hospital facilities, and well-trained medical staff, this old hospital could be used as a temporary isolation center. With Daegu Medical Center as a public hospital, the former Dongsan Hospital played a crucial role in treating and managing

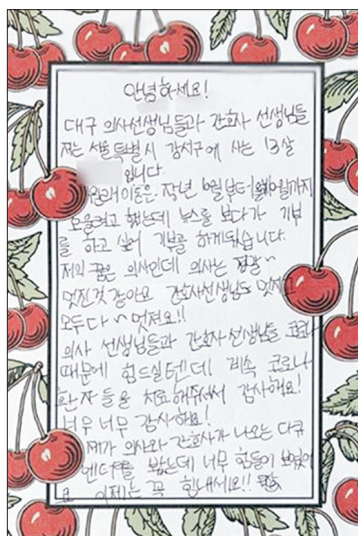


Fig. 4. A letter sent along with a donation to a university hospital in Daegu from a 13-year-old boy to encourage medical staff ("...Thanks to the doctors and nurses. Cheer up.....").



Fig. 5. Letters of encouragement from patients posted on the wall of a hospital in Daegu.

confirmed patients.

During the spread of COVID-19, we have come to deeply understand the need for cooperation to solve common difficulties faced by mankind. The infection crisis that occurred in Daegu earlier this year is now occurring nationwide in South Korea, and not only in Daegu. The measures taken early in the spread of COVID-19 had many flaws. In the early days of the crisis, the government did not actively block population inflow from China and did not seriously consider implementing the quarantine measures claimed necessary by medical experts. We now know from painful experience how dangerous a new epidemic can be. Now, it is necessary to make it clear that today, all humanity is interdependent, and that we are all one community during the pandemic. At the beginning of a crisis, it is necessary to respect and share experiences from various places, to break existing barriers and prejudices, and to support and cooperate with each other.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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