

14. BÖLÜM / CHAPTER 14

Cardiac Surgery During COVID-19 Pandemic and in New Normal

COVID-19 Küresel Salgını ve Yeni Normal Dönemde Kardiyak Cerrahi

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ABSTRACT

The pandemic caused by a new type of coronavirus namely SARS-CoV-2 was initially reported in China in December 2019. After that time, it has become a major global health concern and spread to 216 countries worldwide. The first COVID-19 case was diagnosed in Turkey on March 11, 2020, and again, on 11 March 2020, the World Health Organization (WHO) declared COVID-19 as global pandemic. The major mode of transmission of SARS-CoV-2 is human to human through droplets, respiratory aspirates, direct exposure, feces, and aerosols transmission. Due to its rapid transmissibility and the need for health care resources, nearly all elective cardiac surgical procedures have been cancelled worldwide. The COVID-19 outbreak has had a major impact on healthcare systems globally, necessitating organizational changes in hospitals such as the reallocation of intensive care units for victims of COVID-19. Only urgent or emergent operations could be performed during the COVID-19 outbreak to protect healthcare workers and uninfected patients with cardiovascular disease. Vaccine studies have not been completed yet and an antiviral agent that will directly affect SARS-CoV-2 has not been produced. The aim of this review is to provide the most current information regarding COVID-19 and cardiac surgery.

Keywords: COVID-19, pandemic, cardiac surgery

ÖZ

Yeni bir koronavirüs tipi olan SARS-CoV-2 virüsü nedeniyle ortaya çıkan küresel salgın ilk olarak Aralık 2019 tarihinde Çin'de rapor edilmiştir. O tarihten sonra da önemli bir global sağlık sorunu haline gelmiş ve tüm dünyada 216 ülkeye yayılmıştır. Türkiye'de ilk COVID-19 vakası 11 Mart 2020 tarihinde tanı almıştır ve aynı tarihte Dünya Sağlık Örgütü (DSÖ) COVID-19'u global bir küresel salgın olarak ilan etmiştir. SARS-CoV-2 insandan insana bulaşmaktadır. Başlıca bulaş yolları ise; damlacık, respiratuvar aspiratlar, direkt temas, feçes ve aerosol oluşturan işlemlerdir. İnsandan insana hızlı bulaş olması ve sağlık bakımı kaynaklarına ihtiyaç olması nedeniyle hemen hemen tüm elektif kardiyak cerrahi prosedürler hem ülkemizde hem de tüm dünyada ertelenmiştir. COVID-19 salgını, küresel olarak sağlık hizmetleri sistemleri üzerinde büyük bir etkiye sahip olmuştur. Bu sebepten dolayı da COVID-19 hastaları için yoğun bakım ünitelerinin yeniden tahsis gibi hastanelerde organizasyonel değişiklikler yapılması gerekmiştir. Küresel salgın döneminde sağlık çalışanlarını ve kardiyovasküler hastalığı olan enfekte olmamış hastaları korumak için sadece acil ve acele operasyonlar yapılabilmektedir. Henüz aşı çalışmaları tamamlanmamış ve direkt SARS-CoV-2'ye etki edecek bir anti-viral ajan da üretilmemiştir. Bu yazımın amacı COVID-19 ve kardiyak cerrahi ile ilgili en son bilgileri derlemektir.

Anahtar Kelimeler: COVID-19, küresel salgın, kardiyak cerrahi

INTRODUCTION

A new type of coronavirus namely SARS-COV-2 originated from Wuhan, China, spread to 216 countries worldwide and now is responsible for the current pandemic of coronavirus disease (COVID-19). As of 02 July 2020, the World Health Organization (WHO) has reported a total of more than 10 million COVID-19 confirmed cases with more than 500.000 deaths (1). The major mode of transmission of SARS-CoV-2 is human-to-human through droplets, respiratory aspirates, direct exposure, feces, and aerosols transmission (2). In addition to aerosolization, contamination through the oxygenator or chest drains used in cardiac surgery is also an important issue of viral spread (3). Studies about COVID-19 in Turkey began on January, 10, 2020 and the Scientific Advisory Committee of the Turkish Ministry of Health was established and started to take measures and publish guidelines. Like all over the world, this committee advised to postpone elective interventions and operations for all patients including patients with a confirmed diagnosis of COVID-19 (4). The COVID-19 outbreak has had a major impact on healthcare systems globally, necessitating organizational changes in hospitals such as the reallocation of intensive care units for victims of COVID-19 (5,6). Cardiac surgery is dependent on resources such as anesthesia staff, perfusionists, intensive care units and blood products both perioperatively and postoperatively, and it is known that the numbers of blood donors have reduced during the pandemic. These requirements of cardiac surgery lead Cardiac Surgery Units to operate at a major central unit for emergency or urgent cases, thus in this way the healthcare resources could be used effectively, and the elective cases could be postponed. In many countries, a sudden lack of health care resources occurred such as operating rooms were transformed into intensive care units, ventilators and healthcare staff were required to take care after patients with COVID-19 (7). In Turkey, we, as surgeons, were lucky that we had no lack of healthcare resources, however, to protect patients and healthcare providers, the Scientific Advisory Committee of Turkish Ministry of Health recommended to stop performing elective operations. Additionally, the patients did not want to come to hospitals due to the fear of infection. The major problem in adult cardiac surgical patients is that of which patient is elective, as delaying cardiac surgical procedures may lead to unexpected results and mortality. The Turkish Society of Cardiovascular Surgery determined an algorithm of cardiovascular surgery patients in COVID-19 pandemic according to Level of Priority (LoP); LoP I refers to elective cases, LoP II refers to urgent cases, LoP III refers to emergent cases, and LoP IV refers to salvage cases (8). This algorithm helped the Heart Team to decide the timing of the surgical procedures during the COVID-19 pandemic.

Emergent or urgent cardiac surgery is another challenge during the pandemic period especially in patients with active or recent COVID-19 infection. It is reported that the long-term outcomes of these patients are not well documented and the effects of cardiopulmonary bypass (CPB) that result in an "iatrogenic" cytokine storm namely systemic inflammatory response syndrome (SIRS) should be determined (9).

In Turkey and in many other countries, the incidence of new cases of COVID-19 are declining. As the pandemic has been taken under control, the need for other health services has gradually increased, specifically elective cardiac surgeries. However, the resumption of cardiac surgery requires thoughtful and appropriate caution due to uncertainties of this global pandemic (10,11). Cardiac surgery requires more resources than other surgical specialties as mentioned above, and the need for CPB during cardiac surgery is another problem, as CPB has harmful effects on the lungs and also results in a SIRS that depresses myocardial function and lung injury, and lead to these patients to be vulnerable to COVID-19 infection (12). The Society of Thoracic Surgeons published a COVID-19 task force for guiding

the ramping up delivery of cardiac surgery during the COVID-19 pandemic and stated in a summary that, “adult cardiac surgical programs may begin to ramp up the care delivery in a deliberate and graded fashion as the COVID-19 pandemic burden begins to ease” (11). They recommended three principles while delivering care as; “collaboration” for balancing the needs of patients waiting for surgery and health care resources, “prioritization” of patients awaiting surgery and “reevaluation” of healthcare conditions continuously. All of these recommendations are for the protection of patients, healthcare providers and also the whole society.

Recently, the Scientific Advisory Committee of Turkish Ministry of Health published a guideline on working in healthcare institutions during the normalization period during the COVID-19 pandemic (10) and PCR testing for all patients at least 48 hours before cardiac surgery that requires CPB is recommended regardless of the prevalence and / or test positivity rates.

In summary, cardiac surgical patients pose a challenge during the COVID-19 pandemic due to their risk of poor outcomes from COVID-19 infection, high resource requirements and increased mortality from delays in care. All institutions and healthcare providers should get prepared to fulfill their responsibilities in this new normalization period and should follow the measures that have been taken by both the administration of healthcare institutions and the government.

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