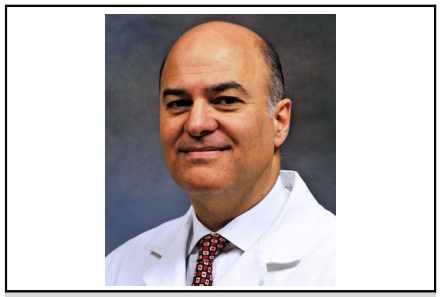
See Article page e97.

Commentary: Adapting the practice of congenital heart surgery to the coronavirus disease 2019 (COVID-19) pandemic

Emile Bacha, MD



Emile Bacha, MD

CENTRAL MESSAGE

As the COVID-19 pandemic ravages some countries, the variable impact on perioperative outcomes for congenital heart patients is slowly becoming more apparent.

Bezerra and colleagues[1] report on an interesting case from São Paulo, Brazil, where, as of this writing in June 2020, coronavirus disease 2019 (COVID-19) is raging. This worldwide pandemic took clinicians by surprise and, as a consequence, there is a lot to catch up on, such as the different manifestations of this new disease, how it affects patients with congenital heart disease (CHD), and on how to prevent it. Writing from the one-time epicenter of the COVID-19 crisis in NYC, our team has unfortunately been confronted with patients with CHD infected with COVID-19 at different perioperative time periods, such as in asymptomatic patients coming from home for semielective surgery who tested positive on their polymerase chain reaction (PCR) nasal swab test, in a patient with cardiomyopathy on extracorporeal membrane oxygenation support who required a ventricular assist device while still positive, and in postoperative patients after Fontan and after truncus arteriosus repair (after testing negative on their preoperative PCR tests). The clinical manifestations were all extremely variable, very much in line with the present report, and affected many organ systems, including peripheral nerves, the gastrointestinal system, and others. Thus, our current experience is eerily similar to that of our Brazilian colleagues.

All indications point to the fact that COVID-19 is going to be a significant disruption in our lives, personal and professional, for a minimum of 1 to 2 years. Thus, in the absence of a vaccine or targeted therapies, trying to elucidate the effect it has on our patients is important.

Clearly, at a minimum, parents and other family members have to be screened for symptoms. Obviously, any child or any child with a family member with viral symptoms should be delayed. Ideally, every patient should be tested by PCR between 1 and 3 days before surgery (the State of New York currently accepts a negative test for up to 5 days before surgery). If positive, the surgery should be delayed for at least 2 weeks and until the patient tests negative. The role of antibody testing in the blood is unclear in this setting. Unfortunately, some countries may not have the capability of testing widely and early and thus may have to rely on the presence of viral symptoms and on the urgency of the surgery to triage patients.

At least during the pandemic, and likely for a while after that, COVID-19 should be high on the list of differential diagnosis for any postoperative patient with CHD behaving abnormally or developing complications. This includes even patients without infectious (fever) symptoms. This is also important to protect health care workers (HCWs) caring for this patient.

Some patients positive for COVID-19 will require open-heart surgery that cannot be delayed. Some evidence is emerging that the viral load and the presence of symptoms have a strong role to play in how manifest the inflammatory response will be. Thus, delay by even a few days might be beneficial. If that is not possible and the patient's life is at risk, then there is no choice but to proceed with surgery. All HCWs in the operating room should be wearing N-95 respirator masks if at all possible, for every case.

In summary, we are just beginning to understand how COVID-19 will affect perioperative outcomes of patients with CHD. Currently, heightened vigilance with appropriate HCW protection and a liberal testing strategy, if available, are key.

From Pediatric and Congenital Cardiac Surgery, Morgan Stanley Children's Hospital NewYork-Presbyterian/Columbia University Medical Center, New York, NY.

Disclosures: The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication June 17, 2020; revisions received June 17, 2020; accepted for publication June 17, 2020; available ahead of print June 24, 2020.

Address for reprints: Emile Bacha, MD, Pediatric and Congenital Cardiac Surgery, Morgan Stanley Children's Hospital NewYork-Presbyterian/Columbia University Medical Center, 3959 Broadway, New York, NY 10032 (E-mail: eb2709@cumc.columbia.edu).

J Thorac Cardiovasc Surg 2021;161:e103-4
0022-5223/$36.00

https://doi.org/10.1016/j.jtcvs.2020.06.013

Reference

1. Bezerra RF, Franchi SM, Khader H, Castro RM, Liguori GR, da Silva LF, et al. COVID-19 as a confounding factor in a child submitted to staged surgical palliation of hypoplastic left heart syndrome: one of the first reports of SARS-CoV-2 infection in patients with congenital heart disease. *J Thorac Cardiovasc Surg*. 2021;161:e97-101.

See Article page e97.

Commentary: "Murder on the Orient Express of pandemic: COVID was found guilty, but was it the murderer?"

Giulia Poretti, MD, and Mauro Lo Rito, MD

Giulia Poretti, MD, and Mauro Lo Rito, MD

CENTRAL MESSAGE

During the COVID-19 pandemic, patients with congenital heart disease may contract the virus. It is easy to accuse the virus, but common hospital complications must not be forgotten: a compelling case.

In Agatha Christie's novel *Murder on the Orient Express*, detective Hercule Poirot brilliantly resolves the murder of Mr Ratchett, a kidnapper, and proposes 2 possible solutions. The first is a plausible solution that fits with the scenario and saves the unfortunate group of murderers, who were looking for revenge. The second solution describes what happened but would have sent all of them to jail. The investigators adopted the first solution as the truth to save the entire family from prison.

Bezerra and colleagues[1] report one of the first Fontan completions in a patient with hypoplastic left heart syndrome who had contracted COVID-19 infection. This case report should be read because it describes all the challenges that our community of congenital cardiac surgeons had to face during this pandemic. The medical evidence so far is that COVID-19 seems to affect children less frequently than adults, although some subgroups may be vulnerable to the most severe form of infection.[2-4] In children, SARS-CoV-2 has a typical presentation with fever, cough associated with leukopenia, and lymphopenia.[5] Multiple small patchy shadows, consolidations, and peripheral interstitial changes are typical radiographic findings.[2,5,6]

The most striking findings in this case report are the COVID-19 nasopharyngeal swab results and the lung involvement. The patient underwent fenestrated extracardiac Fontan completion and tricuspid valve plasty, and then required reoperation for pacemaker implantation secondary to complete atrioventricular block. Subsequently he developed profound desaturation that triggered an invasive cardiologic assessment and COVID-19 swab, based on a family history suggestive for such infection. Surely this is one of the first cases of a patient with COVID-19 who underwent surgery for congenital heart disease, and the explanation provided easily fits the scenario, but that may not be what actually happened. There may be another explanation, and like Hercule Poirot, we would like to take you through it. The initial chest radiograph showed pleural effusion, and radiography after reoperation revealed multiple pulmonary consolidations, most evident in the upper third of the right lung, which is more typical of bacterial pneumonia than of COVID-19. The elevated C-reactive protein level and

From the Department of Congenital Cardiac Surgery, IRCCS Policlinico San Donato, San Donato Milanese, Italy.

Disclosures: The authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication June 3, 2020; revisions received June 3, 2020; accepted for publication June 5, 2020; available ahead of print June 26, 2020.

Address for reprints: Mauro Lo Rito, MD, Department of Congenital Cardiac Surgery, IRCCS Policlinico San Donato, Piazza Edmondo Malan 2, 20097, San Donato Milanese, Italy (E-mail: mauro.lorito@gmail.com).

J Thorac Cardiovasc Surg 2021;161:e104-5

0022-5223/$36.00

https://doi.org/10.1016/j.jtcvs.2020.06.050