

Getting around the pandemic – lessons from the Pediatric Cardiac Society of India COVID-19 study

COVID-19 has not been kind to anyone, not the least to the children with heart disease. In this issue of the journal, the authors report the impact of COVID-19 infection in children with congenital heart defects (CHDs).^[1,2] The authors need to be congratulated to embark upon this unique multi-institutional observational study looking into the factors that could worsen the clinical condition of these children. Essential observations that the study revealed are many. Some are obvious, while others are revealing to say the least.

It is well established that viral pneumonia of any kind in children with CHD results in poor gas exchange and may result in shock syndrome. Undoubtedly, the socioeconomic impact and late presentations in India are the bane of our skewed health care. I was part of the well-curated Indian guidelines on the timing of surgery in children with CHD presenting with serious respiratory infection.^[3] Our study clearly showed that corrective surgeries produce better outcomes, while palliative procedures carry higher morbidity and mortality during these settings partly due to the residual lesions and partly due to the newer hemodynamic challenges. This strategy of corrective surgery worked well for all such scenarios of respiratory tract infections till the COVID-19 began.

What sets apart the current challenge with the COVID-19 infection is its virulence, resistance to known therapies, and higher mortality when compared to earlier viral infections. It is quite evident from the papers even without a sophisticated statistical analysis. COVID-19 infection in patients with CHD is likely to result in more intense multisystemic inflammatory syndrome and pulmonary hemorrhage,^[4] especially in the postoperative period following a cardiopulmonary bypass. Thus, the timing of surgery and managing the postoperative period become even more challenging. In that context, this study gives good insight into the factors that come into play for worse outcomes in COVID-19-positive children. The study has shown that the children from modest socioeconomic background, with cyanotic heart defects, low saturations, and need for immediate ventilation on arrival are having poor chance of survival. These points are relevant in our settings. In addition, remdesivir was not needed for recovery in the majority of children afflicted with COVID-19 in the study group. I do hope this point is imprinted in reader's mind. Fortunately, the

pandemic has infected more older adults than infants and children. As of now, we are ignorant to explain this kindness of COVID-19 toward children.

The Pediatric Cardiac Society of India (PCSI)-COVID-19 study, being a multicentric retrospective observational study, had heterogeneous group of investigators. The site investigators reported data from individual participating centers, and the results were then collectively analyzed. This probably dilutes the strength of the study due to nonuniform interpretations of the same set of clinical variables. However, an honest attempt at collecting the data from around the country and analyzing them by a small group of investigators from India is commendable. It is also the need of the hour.

Every flu pandemic at some point of time in the history of civilization has infected the children and young adults.^[5] The data of this nature from the PCSI COVID-19 study will only help us to navigate the forthcoming challenges of managing this new combination of diseases in children. We are expected to be prepared for the incoming third wave of the pandemic and it is anticipated that there would be significant involvement of children. We do not wish to play Nostradamus in this regard.

As of now, the impending probable pandemic in children in the coming months exists as a mathematically possible event. We, as bedside clinicians, have our reservations as unlike epidemiologists, with this estimate. It is an unlikely event, given the smaller number of children getting infected in relative terms in the previous two waves of the COVID-19 pandemic. However, this should not make us complacent. We, as caregivers, must prepare ourselves to face this challenge in terms of setting infrastructure, arranging resources when needed, manpower, and expertise to provide care beforehand.

The drastic reduction in the number of surgeries for COVID-19-positive children during the study period perhaps reflects the system-related constraints for the duration of the study belongs. The data are from the first wave of COVID-19 infection. Undoubtedly, data beyond August 2020 would provide us more insight, but it should not undermine the efforts made to collect data from so many institutions. Unsurprisingly, the study showed a slightly higher mortality after surgery in these group of children. It is amply clear from both the articles that

the surgery of simple CHD, especially in older children, was drastically reduced. It amplifies the fact that either emergency/mandatory complex or neonatal surgeries were performed in higher numbers or were counted more explaining the higher observed adverse outcomes.

For all of us in surgical side, the pulmonary manifestations of COVID-19 in postoperative children seem to be more severe, resistant to conventional treatments (personal observation, regardless of the reverse transcription-polymerase chain reaction status, we may add). This may further withhold us from performing elective surgeries/interventions than being aggressive to operate upon these children. How these decisions and their dynamics impact the natural history of CHDs in the coming years, only time will tell us and would be speculative as of now. However, the backlog of the pending large number of children awaiting therapies is likely to grow back around the world. It is imperative that policymakers strategize this challenge beforehand so that this issue is addressed before the end of pandemic and attrition rates are minimized, and professionals and patients are not left to firefight all alone.

If we extrapolate experience from COVID-19 in adults, there could be few indications for even extracorporeal membrane oxygenation in children and lung transplantations in children with preexisting heart disease. The resource crunch, however, will pose a substantial challenge should one need such specialized care.

Despite being a retrospective study, it makes observations pertinent to a large section of pediatric cardiac services in India and other low- and middle-income countries. At the very least, such exercises should pave a path for brainstorming sessions to formulate strategies to provide better care for children with heart diseases. The need for multidisciplinary involvement in the care of patients with CHD makes it even more challenging. In unprecedented times like the COVID-19 pandemic, it is not easy to navigate through a plethora of logistic and technical challenges that hamper effective patient care. Professional guidelines and policy statements about effective triaging, effective use of teleconsultation facilities, and other measures to improve access to quality health care are likely to help the patients and health professionals alike. The wealth of information obtained should guide us in providing better care during subsequent waves of the COVID-19 pandemic as we all know that the pandemic is far from over.

In a nutshell, nature has periodically thrown many challenges of this type in the written history of mankind. Humanity has faced them and survived them either by neutralizing them or forcing them to coexist with us. However, the ripple effect of any new challenge has always persisted for varying times. We need to navigate them as we have done for thousands of years. I, for one, want to believe that in terms of cosmic times, it is one more event that humanity has faced and will hopefully escape more determined although at an enormous cost of human lives. Every challenge in human history has been addressed by evolution. Neither humans nor the virus is an exception. While the authors have paved the path, we must use the data thus obtained as we know what Todd Park has said, "Data by itself is useless. Data is only useful if it can be applied for public benefit."

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Krishnanaik Shivaprakasha

Director, Pediatric Cardiac Sciences, Sir HN Reliance Foundation Hospital, Mumbai, India.

Address for correspondence: Dr. Krishnanaik Shivaprakasha,
Sir HN Reliance Foundation Hospital, Mumbai - 400 004,
Maharashtra, India.

E-mail: shivaprakash.krishnanaik@rfhospital.org

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