

COVID-19 and Cardiovascular Procedures

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EDITORIAL

In the latest years, the Coronaviridae family (single-stranded RNA viruses) has become the major pathogen of emerging respiratory diseases outbreaks. Apparently, this pathogens have crossed species barriers and caused, in humans, illnesses ranging from a common cold to severe disease, such as Middle East Respiratory Syndrome (MERS) in 2012 or Severe Acute Respiratory Syndrome (SARS) in 2002 to 2003 [1].

An uprising of the Corona Virus Disease 2019 (COVID-19), generated by the severe acute respiratory syndrome CoV-2 (SARS-CoV-2) swiftly spread from a single city-Wuhan, to the entire country-China in just 30 days and, weeks after, invaded the whole Europe, with Italy and Spain being at the moment the most affected countries, and worldwide-United States of America. The high speed of both the geographical spread and the unforeseen escalation in numbers of cases frightened and quickly overpowered health and public services worldwide. Epidemic trajectory mirror what may be a blended outbreak pattern, with initial cases evocative of a continuous trivial source, probably zoonotic spillover and later cases indicative of a propagated source as the virus began to be transmitted from human-to-human [2].

This new Coronavirus infects the host through angiotensin converting enzyme 2 (ACE-2) receptors and pneumonia induced by it is one of the main reasons for hospitalization.

The COVID-19 related-pneumonia may induce acute and chronic cardiovascular complications in frail patients, with co-morbidities; complications may result from various mechanisms, including systemic inflammation, ischemia and pathogen-mediated harm. In the rise of these viral wave there is limited published data concerning cardiovascular presentations. The present COVID-19 pandemic asserts the demand for higher alertness of the immediate and long-term cardiovascular ramifications of viral disease and the compelling disparities in expertise that future investigations will need to refer [3].

In 2004, Turner et al. discovered that ACE-2, an aminopeptidase which is bound to cellular membranes-highly expressed in the heart and lungs, with a tremendous role in the cardio-vascular system, is also a receptor for coronaviruses, and we include here SARS-CoV and SARS-CoV-2 [4,5]. Taking into consideration that one of the most important antihypertensive therapy is with ACE inhibitors or with angiotensin-receptor blockers (with ACE2 levels increased), lately, a question of safety has emerged concerning patients infected with COVID-19 which are on this class of drugs, assuming a higher mortality rate. Whether these particular group of patients should stop taking these drugs/switch to another class (or even can be seen as protective), still remains controversial between medical experts, although the Council on Hypertension of the European Society of Cardiology has given a position statement on this issue, strongly recommending the continuation of treatment with this antihypertensive class, due to the lack of any scientific evidence supporting otherwise [6]. A similar joint statement on this subject was released on March 17, 2020 by the American College of Cardiology, American Heart Association and Heart Failure Society of America [7].

Cardiovascular procedures-with a main focus on cardiac surgery, can be seen as gradual/continuous conditions and in the last period, due to the current epidemiological status the vast majority of them have been deferred in order to sustain the healthcare system for COVID-19 patients. We consider the triage of this patients very complex, because the main decision to adjourn a patient/procedure should be based upon various conditions, as it follows: of the utmost importance - the availability of surgical/anesthesia staff, intensive care unit beds (with a need for isolation), cardiopulmonary bypass machine, blood products etc; secondly, the patient status should be taken into consideration, with a HEART team discussion in selected cases (stent vs. surgery in significant left main coronaryartery disease, for example); lastly, the constant need (and sometimes absence) for personal protection equipment (PPE), as the most crucial measure during this pandemic.

The anxiety/unpredictability on the anticipated time course of SARS-CoV-2 pandemic may suggest that patients may be underprivileged of admittance to appropriate surgical care possible for many weeks (months?) to come. Imaginable, the immediate consequence from

reckless/selfish elective surgery abandonment may bear a more startling and unfathomable impact on the wellbeing of our societies than the morbidity (and of course-mortality) imposed by COVID-19. It is of crucial importance to discern that the word “elective” surgery does not mean facultative surgery, but mostly suggests that a medical act is not promptly designated in response to a, let us say, a life-threatening urgency. An ongoing projection implies that more than half of all elective (not optional!) surgical cases have a capability to deliver compelling impairment on patients if abolished or deferred [8]. The overall clinical status of a defenseless group of surgical patients can swiftly deteriorate in absence of fitting surgical care, and this issue will definitely lead to a significant deterioration, in the end making them even more exposed to a SARS-CoV-2 infection [8].

On the other hand, one must consider that all medical and surgical staff is at very high risk of infection with SARS-CoV-2 virus and safety measures in the care of all patients and in the synergy between health care workers are of tremendous priority [9]. We believe that personnel administration can assume pertinent measures to disjoint (not so say-isolate) employees into crews/groups, so that achievable separations/quarantines can be enforced to groups within each unit comparatively than the unit as a whole, which would drive to a stoppage of the entire service (mostly accurate for limited/small cardiac surgery units). In the particular, but lately frequent situation when health care workers display respiratory symptoms, they should not offer patient care and be promptly tested for COVID-19. We strongly believe that they should not continue working (even with PPE), until the test results are available (and negative). One must consider that the main issue is that there will be a deficit of workers, and one cannot disburse with those who will sooner or later test negative. If the test is positive for SARS-CoV-2, health care employees have the moral (and legal) duty to stay home and quarantine immediately, if their clinical status allows it to do so.

Occasionally, the expression in some patients infected with COVID-19 can be mellow and can begin with heart palpitations and thoracic tightness, rather than with respiratory distress (for instance - fever and cough) and its diagnosis in patients who have had cardiac surgery can be challenging; the prompt ramifications of deferred recognition of such patients are significant [10].

The SARS-CoV-2 pandemic pursues to weaken our economy, our medical and surgical employees, puts a burden on our hospital capacity and goes on to cause thousands of people infected (some of whom will perish). A few of the public health assumptions in regard to a modality to moderate infectious disease epidemics will be augmented (or changed) by this crisis. With respect to cardiovascular procedures or surgery, we may have to learn that some medical attitudes of what we do can be consummate with tele-medicine as one of the very few

positive facets of this crisis-hopes for new learning. Definitely, the consequences (good or bad whatsoever) of this virus will be perceived for a long period of time (maybe years to come).

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