

A PATIENT IN THE INCUBATION PERIOD OF SARS-COV-2 SUBMITTED TO OPEN-HEART SURGERY

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INTRODUCTION

On the 11th March 2020, WHO announced the Covid-19 outbreak a pandemic. The Centro Hospitalar Universitário S. João (CHUSJ) was the main referring Hospital for the disease in the Northern Region of Portugal, which implied critical resources allocation for the foreseen increased number of admissions. The Department of Cardiothoracic Surgery cancelled all elective surgeries by the 13th of March, while maintaining an adequate level of response for emergent, urgent and high priority cases.

CASE REPORT

In this context, a 76-year-old male with a past medical history of myocardial infarction, EVAR implantation, peripheral artery disease, COPD and metabolic syndrome, presented in the Emergency Department with chest pain lasting for more than 12 hours. A posterior wall NSTEMI was diagnosed after elevated hsTnI and EKG changes. The echocardiogram displayed moderate left ventricle dysfunction, with hypokinesia of anterior and lateral walls plus akinesia of the posterior wall. He was admitted to the Coronary Care Unit, a coronary angiogram performed 5 days later and after Heart Team revision, recommended for surgical revascularization. Although initial episodes of fever and mildly elevated CRP, absence of respiratory symptoms, downward trend of the CRP and a normal CT scan allowed scheduling of cardiac surgery.

The patient was submitted to bilateral internal thoracic artery grafting to the left anterior descending and obtuse marginal branch arteries, under cardiopulmonary bypass and cardioplegic heart arrest. After a straightforward operation, the patient was transferred to the ICU in stable condition.

Initial post-operative blood work and chest X-ray revealed unremarkable, but a new episode of fever raised the suspicion of SARS-2 infection. Despite all clinical evidence being in contradiction of SARS-CoV-2 infection, a

sample was obtained and tested positive. According to the Hospital policy, the patient was transferred to a dedicated COVID-19 intensive care unit.

In the next 48 hours, respiratory failure followed, the diagnosis of viral pneumonia established with a super-infection with *Klebsiella ornithinolytica* imposed. At this point, antibiotic therapy with pyperacilin-tazobactam and vancomycin adjusted for renal impairment were initiated. No immunomodulator was prescribed.

Weaning with success after protective mechanical ventilation was achievable on the 16th day after admission. The patient proceeded on good convalescence despite the identification of *de novo* severe left ventricular dysfunction on echocardiogram. However, no vasopressor support was required and no need for dialysis, notwithstanding a slight rise in serum creatinine, maximal value was 2,0mg/dL.

On the 22nd post-operative day, was transferred to the ward to resume respiratory and motor physiotherapy. During the final period of hospitalization, he remained apyretic, without respiratory symptoms and the CT-scan showed resolution of pneumonic infiltrates. After resuming activity, he was free of angina. Before discharge, echocardiogram displayed a preserved left ventricle ejection fraction only with abnormal motion of apical interventricular septum.

The patient tested negative in RT-PCR SARS-CoV-2 test for the first time 38 days after the diagnosis, and subsequently for three more times before being discharged home in excellent condition, 53 days after surgery.

DISCUSSION

To our knowledge, this is the first report in Portugal, of a cardiac surgery in a patient with Covid-19. Covid-19 virus adversely affects both cardiovascular and respiratory systems, hence cardiac patients have a worst prognosis.¹ In particular, patients with coronary artery disease have an increased risk of severe Covid-19 infection, as they usually present with old age, hypertension, diabetes, obesity and cardiac and pulmonary disease. Furthermore, viremia may

originate acute cardiac injury,² potentially impairing cardiac muscle recovery after successful revascularization. During Covid-19 pandemic, there is a shortage of intensive care beds and SARS-CoV-2 pneumonia is faster and more violent in post-operative patients, with a reported mortality rate up to 20.5%.^{3,4} However, these same patients usually portray severe clinical conditions, delayed surgery will unfavorably impact on survival and quality of life. Hospital resources must be allocated for the demanding increase in health care of critical patients with Covid-19 infection, while maintaining an adequate response to other life-threatening diseases as coronary or valvular heart diseases. During the mitigation phase of disease, rigorous criteria are essential to assure disease free circuits for these serious conditions and surgery should only be indicated for high priority cases. Written protocols should assist the Heart Team with difficult decisions and surgery should be postponed in elective cases.

Protection of both health care professionals and in-Hospital patients is of outmost importance. To prevent cross-infection, it is a current policy in our Department to test all patients and retest them every 5 days, because it is near median incubation period.⁵ Infected patients should be treated in dedicated SARS-CoV-2 units where experience of caring teams is maximized, while minimizing cross-infections.⁶ In the case of preoperative diagnosis of infection, medical treatment should be enhanced, and the surgery should be postponed until the patient recovers from the infection. If an infected patient needs emergent surgery, then patient and family must understand the high risk of the procedure and high probability of cardiorespiratory complications.

Further studies are needed to improve healthcare of cardiovascular patients in these difficult times.

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