Urgent, extensive cardiac surgery two weeks after SARS-CoV-2 infection

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During the pandemic, a subset of patients require urgent cardiac surgical intervention while being infected with the SARS-CoV-2 virus. This leads to several issues, including decisions about the optimal timing and extent of the surgery [1]. We report on a case of a 41-year-old patient, who underwent urgent cardiac surgery 14 days after being diagnosed with SARS-CoV-2 infection. After the polymerase chain reaction (PCR) test confirmed the active SARS-CoV-2 infection and before the surgery, the patient received 14 days of treatment in the cardiac intensive care unit (ICU) for symptoms related to circulatory and respiratory failure. These symptoms, exacerbated by the SARS-CoV-2 infection, were caused by severe aortic valve regurgitation and secondary severe mitral and tricuspid valve regurgitation (Figure 1A). Additionally, echocardiography revealed impaired left ventricular ejection fraction (LVEF) of 38%, cardiomyopathy (end-diastolic volume of 260 ml, end-systolic volume of 140 ml), severe pulmonary hypertension of 96 mm Hg, patent foramen ovale with left-to-right shunt, and giant aortic aneurysm involving the aortic root, ascending aorta and the proximal segment of the aortic arch. The computed tomography (CT) angiography showed the aneurysm of the ascending aorta measuring 97 × 95 mm,

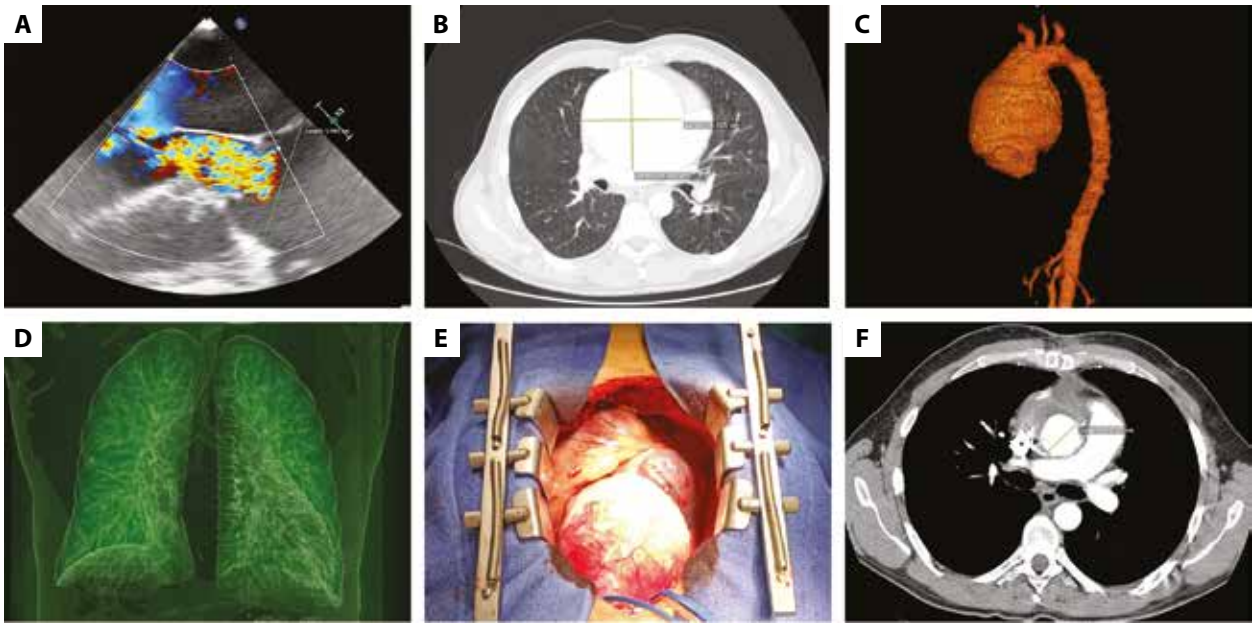

Figure 1. A. Preoperative transesophageal echocardiography showing severe aortic valve regurgitation. **B.** Preoperative computed tomography angiography showing a giant ascending aorta aneurysm. **C.** Preoperative computed tomography angiography 3D reconstruction showing the aneurysm involving the aortic root, ascending aorta and proximal segment of the aortic arch. **D.** Preoperative computed tomography 3D reconstruction of the pulmonary matrix. **E.** Intraoperative image of the aortic aneurysm. **F.** Follow-up computed tomography angiography 2 months post-surgery

involving the proximal segment of the aortic arch and the aortic root (63 mm) (Figure 1B, C), as well as pulmonary interstitial lesions typical of the SARS-CoV-2 induced pneumonia (Figure 1D). After the infection symptoms subsided (CT revealed only residual, perihilar inflammatory consolidations in both lungs) and a negative PCR test was obtained, the patient underwent urgent cardiac surgery [2] which included (Figure 1E):

- mitral valve repair — size 28 mm CG Future ring (Medtronic Inc., Minneapolis, MN, USA) annuloplasty;
- aortic valve replacement — size 23 mm St Jude Regent mechanical prosthesis (St. Jude Medical, Inc., St. Paul, MN, USA);
- tricuspid valve repair — size 30 mm MC3 ring (Edwards Lifesciences, Irvine, CA, USA) annuloplasty;
- patent foramen ovale closure;
- replacement of the right coronary sinus with coronary ostium reimplantation;
- replacement of the ascending aorta and hemiarch replacement with the use of a 30-mm diameter Dacron graft.

Due to excessive bleeding during surgery, the patient received several transfusions of blood products and underwent delayed chest closure. In the early postoperative period, prolonged mechanical ventilation (total 72 hours) was required due to poor oxygenation. On the 5th postoperative day, the patient was discharged from the ICU, and on the 9th postoperative day discharged home after echocardiography revealed a good function of the aortic valve prosthesis, no mitral and tricuspid regurgitation, completely closed interatrial septum and LVEF of 35%. Echocardiography performed 2 months after surgery confirmed the findings at discharge, except for the LVEF which improved to 40%. Computed tomography did not reveal inflammatory lesions in the lungs, and following aortic diameters were measured: aortic root 38 mm, ascending aorta 30 mm, and aortic arch 32 mm (Figure 1F). Three months after surgery, the patient resumed his professional activity.

In summary, when extensive, urgent cardiac surgery is required, it can be performed with good outcome relatively early after SARS-CoV-2 infection, however, the postoperative course may be complicated by prolonged respiratory failure.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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