

818 Impaired clinical outcome and increased postoperative complications in COVID-19 patients undergoing cardiopulmonary bypass

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Objective: Previous studies reported unfavorable results in COVID-19 patients who underwent cardiac surgery. Complications most frequently observed were respiratory failure and higher incidence of thromboembolic events. We present our single-center experience in patients with perioperative diagnosis of COVID-19 infection undergoing cardiac surgery with extracorporeal circulation.

Methods: In this observational matched case-control (propensity match 1:2) study, we collected data of patients undergoing open heart cardiac surgery from January 2020 to May 2021, having positive perioperative diagnosis of COVID-19 infection confirmed by polymerase Chain Reaction-PCR (study group). Patients were compared with 56 corresponding controls (control group) who matched for age, sex, body mass index (BMI) and Euro-Score II.

Results: In the study period 1060 patients underwent cardiac surgery with cardiopulmonary bypass (CPB). Among them, 28 consecutive patients, aged 70.1 ± 9.3 years, had perioperative diagnosis of COVID-19 infection. Four (14%) patients underwent

emergency surgery for type-A aortic dissection, 2 (7%) patients died in the Intensive Care Unit for severe respiratory failure, shock and multiple organ failure. Significant bleeding complications occurred in 14 (50%) patients in the study group (vs 6% in the control group, $p < 0.05$). In the study group, 11 (39%) patients required early surgical reexploration for bleeding, 5 presented cardiac tamponade, 5 (18%) underwent multiple surgical revisions for recurrent bleeding. Three (11%) patients required late chest drainage of a massive sero-hemorrhagic pleural effusion, 1 (4%) presented late postoperative intracranial hemorrhage. Fourteen (50%) patients had severe thrombocytopenia (vs 9% in the control group, $p < 0.05$). In the study group blood components transfusion and procoagulant drugs administration increased (79% and 78% vs 18% and 11% in the control group, respectively, $p < 0.05$). In the study group 6 (21%) patients presented postoperative acute renal failure (2% in the control group, $p < 0.05$), 7 (25%) acute respiratory failure ($p < 0.05$) requiring prolonged postoperative orotracheal intubation. Sternal dehiscence was observed in 4 (14%) patients in the study group (vs 4% in the control group, $p < 0.05$). Complications significantly

influenced hospital stay length (20 ± 3.1 vs 8.1 ± 3.9 days, $p < 0.05$). In the multivariable logistic regression model the SARS-CoV-2 infection and renal failure were independent factors associated with severe postoperative complications ($p < 0.01$). **Conclusions:** Clinical outcome of open heart cardiac surgery patients with perioperative COVID-19 infection appears significantly impaired in terms of mortality and postoperative complications. CPB-related inflammatory reaction could likely exacerbate the deleterious effect of COVID-19 on the respiratory and renal systems, as well as on the coagulation pathways. Early and late hemorrhagic complications were very frequent with significantly increased surgical reexplorations for bleeding, a higher incidence of severe thrombocytopenia, of blood components transfusion and procoagulant drugs administration. The increased surgical risk should suggest a cautious attitude in indicating open heart surgery in patients with perioperative COVID-19 infection and surgery should be limited to not postponable or to urgent cases.