

# COVID-19 in heart transplant recipients

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**Introduction:** Data on heart transplant (HTx) patients and infection with acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are very limited. There is significant heterogeneity in the clinical presentation.<sup>1</sup> Immunosuppression-related issues are of the main concern because of an increased risk for viral replication and superimposed infections. There is no evidence-based recommendation for the management of these patients. Some authors suggest modification in immunosuppression, i.e. discontinuation of mycophenolate mofetil (MMF) and calcineurin inhibitor (CNI) reduction in patients with more severe clinical presentation.<sup>2</sup>

**Patients and Methods:** This is a case series of 5 HTx recipients from our center who tested positive for COVID-19 infection and were treated in different COVID-19 specialized units.

**Results:** There were 4 male and one female patients, 62-75 years old. Four of them were symptomatic and hospitalized, while one remained self-quarantined at home. The clinical presentation was mild to moderate, with symptoms including mild fever, dyspnea, and myalgia. X-ray signs of pneumonia were present in 3 patients, but none needed ICU care nor mechanical ventilation. Both a reduction of CNI dose with lower target serum concentration and MMF was discontinued in all patients. One patient was treated with hydroxychloroquine, one with remdesivir and one with steroid therapy. Antibiotics prophylaxis was administered in 2 patients. None of the patients experienced overt graft rejection and all patients have successfully recovered (**Table 1**).

**Conclusion:** Lacking any evidence-based recommendation for the treatment of HTx patients infected with SARS-CoV-2, we are challenged to modify maintenance immunosuppression carefully balancing between the risk of uncontrolled viral replication with a superimposed infection on one side, and the increased risk of graft rejection on the other side. Further studies are needed to determine the optimal management of COVID-19 infection in these patients.

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**TABLE 1. Main characteristics of the 5 heart transplant patients with COVID-19.**

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
<b>Age (years)</b>	63	57	62	75	66
<b>Gender</b>	Female	Male	Male	Male	Male
<b>Time from HTx (years)</b>	3	3	3	10	5
<b>Immunosuppressive therapy (mg/day)</b>					
<b>Tacrolimus</b>	1.5	2	-	1.5	-
<b>Cyclosporine</b>	-	-	160	-	160
<b>Mycophenolate mofetil</b>	1500	-	3000	2000	2000
<b>Everolimus</b>	-	0.5	-	-	-
<b>COVID-19 onset</b>					
<b>Presenting symptoms</b>					
<b>Cough</b>	-	+	-	-	-
<b>Shortness of breath</b>	+	+	+	-	+
<b>Myalgia</b>	+	+	+	-	+
<b>Anosmia</b>	+	+	-	-	-
<b>Headache</b>	+	-	-	-	+
<b>Sinusitis</b>	-	-	-	-	-
<b>Gastrointestinal symptoms</b>	-	-	-	-	+
<b>NPS test</b>	+	+	+	+	+
<b>X-ray pneumonia signs</b>	-	+	+	-	+
<b>Fever peak (°C)</b>	37.9	38	37.6	36.6	37.8
<b>Hospitalization</b>	-	+	+	+	+
<b>SpO<sub>2</sub> at admission (%)</b>	/	90	95	96	96
<b>Worst SpO<sub>2</sub> during hospitalization</b>	/	90	94	91	96
<b>Laboratory results at admission</b>					
<b>WBC count (cells per 10<sup>9</sup>/l)</b>	4.0	5.5	5.3	2.8	7.5
<b>Hb (g/l)</b>	121	139	139	105	149
<b>Platelets (cells per 10<sup>9</sup>/l)</b>	283	124	192	111	140
<b>Lymphocyte (cells per 10<sup>9</sup>/l)</b>	0.60	1.70	0.55	0.62	/
<b>CRP (mg/l)</b>	0.9	57.4	6.8	0.4	20
<b>Creatinine (umol/l)</b>	107	126	72	136	169
<b>Troponin I (ug/l)</b>	/	/	4	/	/
<b>Treatment and outcomes</b>					
<b>Hydroxychloroquine</b>	-	-	-	-	+
<b>Remdesivir</b>	-	-	+	-	-
<b>Corticosteroid therapy</b>	-	+	-	-	-
<b>Discontinuation of mycophenolate mofetil</b>	+	+	+	+	+
<b>Antibiotics prophylaxis</b>	-	+	-	-	+
<b>ICU stay</b>	-	-	-	-	-
<b>Mechanical ventilation</b>	-	-	-	-	-
<b>Complications</b>	-	-	-	-	-
<b>In-hospital length of stay (days)</b>	/	5	9	21	11
<b>Outcome</b>	Alive	Alive	Alive	Alive	Alive

NPS- nasop haryngeal swab test, SpO<sub>2</sub> - oxygen saturation, CRP- C-reactive protein, ICU - intensive care unit

**LITERATURE**

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