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LETTER TO THE EDITOR

Taking care of kidney transplant recipients during the COVID-19 pandemic: Experience from a medicalized hotel

To the Editor,

The global overload that health systems are undergoing since the start of the COVID-19 pandemic has forced hospitals to explore sustainable alternatives to treat vulnerable patients that require closer monitoring and higher use of resources, such as Kidney Transplant Recipients (KTRs).[1,2] The use of telemedicine and hospital-like infrastructures represent a valid option for most patients with mild-moderate COVID-19, as well as for patients in the recovery phase who cannot be discharged from hospital.[3,4] Herein, we present our experience with KTRs infected by SARS-CoV-2 in the *Hotel Salut* (Health Hotel, HH), which was set-up within 2.5 km from the Hospital on March 25, 2020, coinciding with the main COVID-19 outbreak in Spain. At full capacity, the HH could accommodate up to 300 patients across 6 floors of 50 single-rooms each floor. The HH was equipped with both human and material resources from the Hospital Clínic of Barcelona, including 24-hour medical and nurse attention, availability of high-flux oxygen, a pharmacy and the same IT equipment.

By the end of May, 45 KTRs who were followed-up at our center developed COVID-19, of which 28 were hospitalized at the Hospital Clínic. Twelve patients were transferred to the HH according to the following criteria: (a) >6 days from symptoms onset, (b) temperature below 37.3°C, iii) Respiratory rate < 22 per minute and FiO2 < 0.35, iv) C-Reactive Protein < 5 mg/dL or descending, LDH < 240 UI/L or descending, lymphocytes > 1000/mm^3 or increasing, and v)without radiological progression. Baseline characteristics and treatment are highlighted in Table 1 and are described as median [interquartile range], frequencies, and percentages. Differences were explored the with Mann–Whitney test or Fisher's exact test with SPSS 25.0 (SPSS Inc). The study has been approved by the local Ethical Committee (code HCB/2020/0641). The treatment protocol used in the HH was the same as the one carried out in the Hospital, and already described by our group.[5] Mycophenolate and/or mTOR inhibitors were discontinued in all patients. Calcineurin inhibitors were also suspended in case lopinavir/ritonavir was prescribed. KTRs were transferred to HH after 8.0 [4.25-13.50] days of hospitalization; at that stage none of them had fever and 20% were still needing oxygen. Hospital stay was significantly shorter for patients treated at HH than for those discharged directly from the hospital (12.50 [8.25-19.50] days, P = .001). Median stay at the HH was 9.50 [6.50-12.50] days, and only one patient was readmitted to the Hospital for respiratory deterioration 3 days after HH admission, being discharged from the hospital 9 days afterward. Evolution of clinical parameters reflected progressive recovery after infection (Figure 1). It should be noted that stay at HH also allowed the gradual reintroduction of immunosuppression despite the challenging interactions between calcineurin inhibitors (CNIs) and the antiviral agents.[6,7] Therefore, tacrolimus was restarted 9 [8- 11] days after withdrawal, with trough levels of 4.85 [3.92-5.55]ng/mL at the time of HH discharge. The rest of immunosuppressant drugs were introduced gradually afterward, tapering the steroids simultaneously.

In conclusion, although our study was conducted among a small proportion of all the COVID-19 infected KTRs, treating them at a medicalized hotel facility allowed us to monitor their progress closely, thus obtaining positive clinical outcomes as well as the ability to safely reintroduce immunosuppression.

Members of the Hospital Clínic 4H Team are listed in the Acknowledgements.

TABLE 1 Baseline characteristics and treatment of KTRs total population. Comparison between KTRs who were transferred to the *Hotel Salut* (Health Hotel, HH) and those who were discharged directly from the Hospital

	Total population (n = 28)	Transferred to HH (n = 12)	Discharged from the Hospital (n = 16)	*P*-value
Age	52.50 [46.25-68]	48.50 [43.75-57.25]	58 [47.25-72.75]	.110
Sex (% males)	18/28 (64.3%)	7/12 (58.3%)	11/16 (68.8%)	.698
Time from transplant	56.46 [22.01-125-45]	42.56 [12.21-74.75]	65.15 [26.11-134.92]	.423
Baseline immunosuppression				
TAC + MPA	14/28 (50.0%)	5/12 (41.7%)	9/16 (56.3%)	.240
TAC + mTORi	9/28 (32.1%)	6/12 (50.0%)	3/16 (18.8%)	
Other	5/28 (17.9%)	1/12 (8.3%)	4/16 (25.0%)	
Creatinine at baseline (mg/dL)	1.55 [1.15-2.18]	1.93 [1.44-2.54]	1.29 [1.13-2.10]	.093
Positive PCR swab (%yes)	23/28 (82.1%)	9/12 (75.0%)	14/16 (87.5%)	.624
Symptoms (%yes)				
Fever	26/28 (92.9%)	10/12 (83.3%)	16/16 (100.0%)	.175
Cough	18/28 (64.3%)	9/12 (75.0%)	9/16 (56.3%)	.434
Dyspnea	9/28 (32.1%)	2/12 (16.7%)	7/16(43.8%)	.223
Gastrointestinal	7/28 (25.0%)	2/12 (16.7%)	5/16 (31.3%)	.662
Dysgeusia	3/28 (10.7%)	1/12 (8.3%)	2/16 (12.5%)	1
Pneumonia	25/28(95.3%)	9/12 (75.0%)	16/16 (100.0%)	.067
AKI	19/28 (67.9%)	9/12 (75.0%)	10/16 (62.5%)	.687
Need of dialysis	3/28 (10.7%)	0/12 (0.0%)	3/16 (18.8%)	.238
Treatment				
Lopinavir/Ritonavir	24/28 (85.7%)	9/12 (75.0%)	15/16 (93.8%)	.285
Hydroxicloroquine	27/28 (96.4%)	12/12 (100.0%)	15/16 (93.8%)	1
Azithromycin	27/28 (96.4%)	11/12 (91.7%)	16/16 (100.0%)	.429
Tocilizumab	18/28 (64.3%)	6/12 (50.0%)	12/16 (75.0%)	.243
Steroids (bolus)	8/28 (28.6%)	3/12 (25.0%)	5/16 (31.3%)	1
ICU Admission	8/28 (28.6%)	3/12 (25.0%)	5/16 (31.3%)	1
Death	5/28 (17.9%)	0/12 (0.0%)	5/16 (31.3%)	.053
Length of stay				
At the Hospital	12.50 [8.25-19.50]	8 [4.25-13.50]	15.50 [12-25.50]	.001
At the Hotel	/	9.50 [6.50-12.50]	/	
Total	18 [13-24]	19.00 [16.25-24]	15.50 [12-25.50]	.631

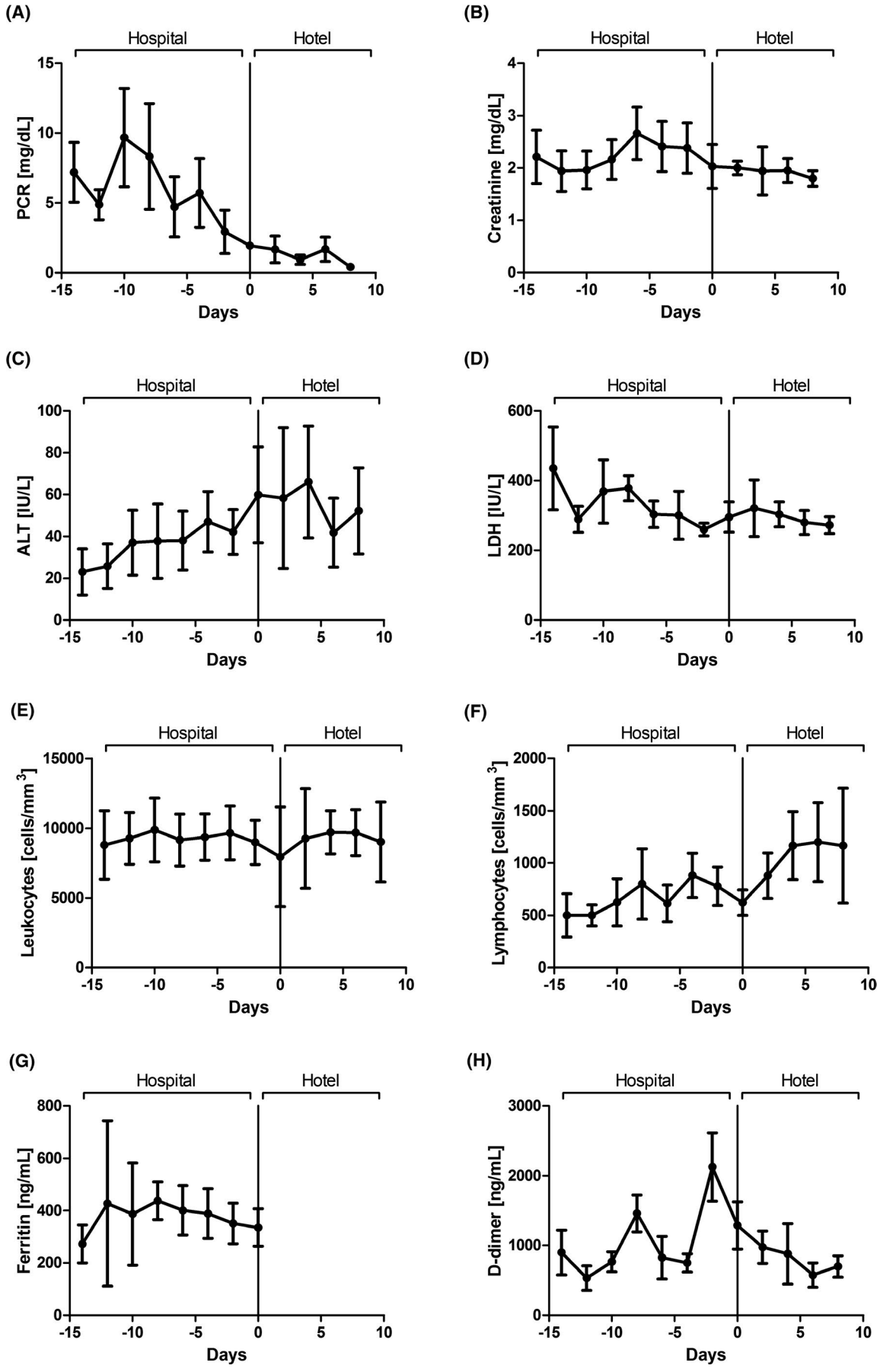

FIGURE 1 Evolution of COVID-19-related laboratory parameters before and after HH admission

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CONFLICT OF INTEREST

The authors of this manuscript have no conflicts of interest to disclose as described by Clinical Transplantation.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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