Received: 7 May 2020 | Revised: 22 May 2020 | Accepted: 26 May 2020

DOI: 10.1111/ajt.16107

LETTER TO THE EDITOR

AJT

Recovery from COVID-19 following hepatitis C, human immunodeficiency virus infection, and liver transplantation

To the Editor:

Immunosuppression and frequent comorbidities in transplant recipients potentially increase the risk of fatal outcomes of pandemic coronavirus disease 2019 (COVID-19).[1]

A 1965 born male had suffered from hemophilia A. In the 1970s, he acquired hepatitis C virus (HCV) infection, probably via factor VIII supplementation, and in 1985 human immunodeficiency virus (HIV) infection. Interferon-based HCV therapy resulted in a sustained virological response. Antiviral treatment with emtricitabine/tenofovir alafenamide/rilpivirin for HIV is ongoing since 2016. HIV suppression with repeatedly negative PCR results has been achieved.

Liver cirrhosis was diagnosed in 2017. In 2018, a solitary hepatocellular carcinoma with a diameter of 55 mm was detected. After successful downstaging by transarterial chemoembolization,[2] the patient underwent uneventful liver transplantation (LT) in January 2019. Initial immunosuppressive (IS) therapy consisted of tacrolimus, mycophenolate, and steroids. Steroids were ceased within 3 months. Check-ups showed good graft function and general condition. One year after LT, HIV-PCR was negative. CD4 cell count was 820/μL (normal 411-1610), CD4/CD8 ratio was 3.16 (normal 1-4.8).

On March 11, 2020, the patient met with friends, of which one had mild flu-like symptoms. Twelve days later he developed fatigue and fever up to 39.6°C. He stayed at home and took paracetamol against the fever. On March 26, he went to the local hospital in order to be checked for COVID-19. Following worsening symptoms and a positive result for SARS-CoV-2 PCR, he was hospitalized on April 2nd. The patient presented with fever (39.4°C), fatigue, cough, and tachycardia. Laboratory examination revealed moderate systemic inflammation with CRP 6.1 mg/dL (normal < 0.5), interleukin-6 50.9 pg/mL (normal < 7), but normal procalcitonin and WBC. Aminotransferases were moderately elevated, synthetic liver function, and renal function were normal. Chest X-ray showed diffuse bilateral infiltrates.

He received oxygen via nasal probe and ampicillin/sulbactam to prevent bacterial superinfection. No additional antiviral treatment was given. IS therapy was continued without changes. Fever ceased on day 3 of the hospital stay and symptoms gradually disappeared. Repeat SARS-CoV-2 PCR tested negative on April 8, and follow-up chest X-rays showed diminishing infiltrates. On April 9, he was discharged without fever and in good clinical condition. At a check-up on May 15, flow cytometry showed normal CD4 cell count of 638/μl. HIV-PCR had turned into slightly positive values (2.8×10^1 copies/mL).

Mortality rates of SARS-CoV-2 infection and COVID-19 in LT recipients cannot be specified to date. Full IS therapy of the early postoperative period does not appear to be a risk factor of severe course, whereas age and metabolic risk conditions distinctly seem to predispose towards fatal outcome.[1] Our patient does not show the common phenotype of metabolic syndrome. Maintenance of IS during COVID-19-illness has recently been recommended.[3] A potential protective mechanism might be based on the properties of calcineurin inhibitors to reduce the production of cytokines such as interleukin-6 and TNF-α.[4]

Whether long-term HIV therapy had an influence on the outcome remains unclear. The moderate course and final recovery in a LT patient with complex virological history may be encouraging for patients and health-care professionals.[5]

KEYWORDS

clinical research/practice, infection and infectious agents – viral: hepatitis C, infection and infectious agents – viral: human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), liver transplantation/hepatology, organ transplantation in general

DISCLOSURE

The authors of this manuscript have no conflicts of interest to disclose as described by the *American Journal of Transplantation*.

Helmut Müller[1]
Daniela Kniepeiss[1]
Rudolf Stauber[2]
Harald Schrem[1]
Markus Rauter[4]
Robert Krause[3]
Peter Schemmer[1]

[1]*General, Visceral and Transplant Surgery, Department of Surgery, Medical University of Graz, Graz, Austria*

[2]*Division of Gastroenterology and Hepatology, Department of Internal Medicine, Medical University of Graz, Graz, Austria*
[3]*Section of Infectious Diseases and Tropical Medicine, Department of Internal Medicine, Medical University of Graz, Graz, Austria*
[4]*Department of Lung Diseases, Klinikum Klagenfurt am Wörthersee, Klagenfurt, Austria*

Correspondence
Peter Schemmer
Email: peter.schemmer@medunigraz.at

ORCID
Helmut Müller https://orcid.org/0000-0003-4994-5454
Peter Schemmer https://orcid.org/0000-0002-4192-6155

REFERENCES

1. Bhoori S, Rossi RE, Citterio D, Mazzaferro V. COVID-19 in long-term liver transplant patients: preliminary experience from an Italian transplant centre in Lombardy. *Lancet Gastroenterol Hepatol*. 2020;5(6):532-533.
2. Mazzaferro V, Sposito C, Zhou J, et al. Metroticket 2.0 model for analysis of competing risks of death after liver transplantation for hepatocellular carcinoma. *Gastroenterology*. 2018;154(1):128-139.
3. Fix OK, Hameed B, Fontana RJ, et al. Clinical best practice advice for hepatology and liver transplant providers during the COVID-19 pandemic: AASLD expert panel consensus statement [published online ahead of print 2020]. *Hepatology*. https://doi.org/10.1002/hep.31.
4. Howell J, Sawhney R, Testro A, et al. Cyclosporine and tacrolimus have inhibitory effects on toll-like receptor signaling after liver transplantation. *Liver Transpl*. 2013;19(10):1099-1107.
5. Huang JF, Zheng KI, George J, et al. Fatal outcome in a liver transplant recipient with COVID-19 [published online ahead of print 2020]. *Am J Transplant*. https://doi.org/10.1111/ajt.15909