

## COVID-19 in liver transplant recipients: preliminary data from the ELITA/ELTR registry

Whether liver transplant recipients are at a particularly high risk for critical COVID-19 needs clarification. To date, data are scarce<sup>1-4</sup> and results conflicting.

On March 30, 2020, the European Liver and Intestine Transplantation Association (ELITA) sent out a call to establish a COVID-19 registry for liver transplant recipients to 149 liver transplant centres affiliated to the European Liver Transplant Registry (ELTR) located in 30 European countries. 114 (77%) centres responded to the call, with 56 (49%) of these having observed cases of COVID-19 in their liver transplant recipients. We report data from the first 103 COVID-19 cases observed between March 1, and April 24, 2020, mainly from centres located in specific areas of Italy, Spain, and France. The cutoff for follow-up for this analysis was April 24, 2020. Eight patients have been also included in the COVID-Hep registry but were not among the cases reported by Webb and colleagues.<sup>3</sup>

76 (74%) recipients were male and 27 (26%) were female. The median age was age 65 years (range 11–82). Around half of patients had hypertension and two-fifths had diabetes (appendix). 13 (13%) patients had a history of tobacco smoking. 86 (85%) of 101 patients with available data were receiving tacrolimus as their primary immunosuppressant. Severe acute respiratory syndrome coronavirus 2 infection was confirmed by RT-PCR of respiratory swabs in 100 (97%) of 103 cases. The most common presenting symptoms were fever, cough, and shortness of breath (appendix). 20 (19%) patients without clinically significant respiratory symptoms were monitored at home, 68 (66%) were admitted to a general ward, and 15 (15%) were admitted

to intensive care units. 64 (62%) hospitalised patients had radiological findings that were consistent with viral pneumonia. 68 (66%) patients required respiratory support, including oxygen supplementation (40 [59%] patients), non-invasive ventilation (15 [22%] patients), and mechanical ventilation (ten [15%] patients). The most frequent treatments for COVID-19 are reported in the appendix.

At a median follow-up of 18 days (range 1–121), 16 (16%) liver transplant recipients, including four (44%) of the nine patients on mechanical ventilation, had died. Mortality was observed only in patients aged 60 years or older (16 [22%, 95% CI 13–33] of 73 patients vs none [0%, 0–13] of 27 patients younger than 60 years), and was more common in male recipients than in female recipients (appendix). Although not statistically significant, more patients who were transplanted at least 2 years previously died than did those who received their transplant within the past 2 years (15 [18%, 95% CI 11–28] of 82 patients vs one [5%, 0–24] of 21 patients; appendix).

The results from the ELITA/ELTR COVID-19 registry suggest that mortality in liver transplant recipients might be higher in older recipients than in younger patients and could be worse in patients with longer time since transplantation. Further research is needed to determine whether immunosuppression and immunosuppression-associated co-morbidities might play a role.

LSB reports personal fees from Merck Sharp & Dohme and Biotest. CD reports grants and personal fees from Biotest and personal fees from Novartis, Astellas, and Sandoz. LP reports grants from AbbVie and Gilead. CL reports personal fees from Biotest, grants and personal fees from Ethicon, grants from Medtronic, and non-financial support from Novartis. All other authors declare no competing interests.

\*Luca S Belli, Christophe Duvoux, Vincent Karam, Rene Adam, Valentin Cuervas-Mons, Luisa Pasulo, Carmelo Loinaz, Federica Invernizzi, Damiano Patrono, Sherrie Bhoori, Olga Ciccarelli, Maria Cristina Morelli,

Lluís Castells, Victor Lopez-Lopez, Sara Conti, Costantino Fonddevila, Wojciech Polak  
luca.belli@ospedaleniguarda.it

Department of Hepatology and Gastroenterology, Niguarda Hospital, Milan 20162, Italy (LSB); Department of Hepatology and Liver Transplant Unit, Henri Mondor Hospital, Paris-Est University, Paris, France (CD); Centre Hépatobiliaire, Université Paris-Sud, Hôpital Paul Brousse, Paris, France (VK, RA); Dipartimento de Medicina, Hospital Universitario Puerta de Hierro, Madrid, Spain (VC-M); Division of Gastroenterology and Hepatology, Papa Giovanni XXIII Hospital, Bergamo, Italy (LP); Chirurgia General, Doce de Octubre Universidad Complutense de Madrid, Madrid, Spain (CL); Division of Gastroenterology and Hepatology, University of Milan, Milan, Italy (FI); Liver Transplant Unit, University of Turin, Turin, Italy (DP); Department of Surgery and Oncology, Istituto Nazionale Tumori, Milan, Italy (SB); Starzl Abdominal Transplant Unit, Université Catholique de Louvain, Brussels, Belgium (OC); Liver and Multi-organ Transplantation, University of Bologna, Bologna, Italy (MCM); Liver Unit, Internal Medicine Department, Hospital Universitari Vall d'Hebron, Barcelona, Spain (LC); Department of General and Transplantation Surgery, University Hospital Virgen de la Arrixaca, Murcia, Spain (VL-L); Research Centre on Public Health, University of Milan-Bicocca, Monza, Italy (SC); Department of Surgery, University of Barcelona Villarroel, Barcelona, Spain (CF); and Department of Surgery, Erasmus MC-University, Rotterdam, Netherlands (WP)

- 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: 532–33.
- 2 D'Antiga L. Coronaviruses and immunosuppressed patients: the facts during the third epidemic. *Liver Transpl* 2020; published online Mar 20. DOI:10.1002/lt.25756.
- 3 Webb GJ, Moon AM, Barnes E, Barritt AS, Marjot T. Determining risk factors for mortality in liver transplant patients with COVID-19. *Lancet Gastroenterol Hepatol* 2020; 5: 643–44.
- 4 Pereira MR, Mohan S, Cohen DJ, et al. COVID-19 in solid organ transplant recipients: initial report from the US epicenter. *Am J Transplant* 2020; published online April 24. DOI:10.1111/ajt.15941.



*Lancet Gastroenterol Hepatol* 2020

Published Online  
June 4, 2020  
[https://doi.org/10.1016/S2468-1253\(20\)30183-7](https://doi.org/10.1016/S2468-1253(20)30183-7)

See Online for appendix