

Answering Reviewers

Dear reviewer,

Thank you for taking the time to review the manuscript.

As regards your comments:

Alfishawy et al. provided an up-to-day overview on LTx during COVID-19 pandemic. However, so far, there have been published guidelines of few international hepatological associations regarding the effect of SARS-CoV-2 on the liver, patients with liver disease, awaiting on Ltx or being after LTx in the pandemic COVID-19 area. Those include: - European Association for the Study of the Liver (EASL) and European Society of Microbiology and Infection Diseases (ESMID). - American Association for the Study of Liver Diseases (AASLD), - International Pediatric Transplant Association (IPTA). I propose to compare these recommendations with each other. It would be essential.

We added this paragraph about guidelines and recommendations:

Society guidelines and recommendations

Many society guidelines also were issued to address COVID-19 in transplant recipients. European Association for the Study of the Liver (EASL) and European Society of Clinical Microbiology and Infection Diseases (ESMID) have issued a joint guideline for patients with liver disease and in transplant section they emphasized on reducing direct exposure and more outpatient care while promoting telemedicine services with local laboratory testing and recommended against decreasing immune suppression.[1] After six months of the pandemic another position paper was released and had more recommendations as screening donors with RT-PCR, close monitoring of drug levels and recommended early admissions for COVID-19 transplant recipients.[2]

American Association for the Study of Liver Diseases (AASLD) also have issued clinical guideline from an expert panel consensus during the pandemic had similar recommendations, but more detailed recommendations were added including advice about staying home, ensuring availability of refills and more inpatient care advice as medication management and airway management.[3]

Both EASL and AASLD recommended COVID-19 vaccines for patients with liver disease but they were skeptical for liver transplant recipients given scarce data as the initial studies excluded transplant recipients and there was a theoretical risk of immune mediated rejection with newer vaccines. [4,5]

1. Boettler T, Newsome PN, Mondelli MU, et al. Care of patients with liver disease during the COVID-19 pandemic: EASL-ESCMID position paper. *JHEP Rep.* 2020;2(3):100113. doi:10.1016/j.jhepr.2020.100113
2. EASL position paper on the use of COVID-19 vaccines in patients with chronic liver diseases, hepatobiliary cancer and liver transplant recipients. Markus Cornberg, Maria Buti, Christiane S. Eberhardt, Paolo Antonio Grossi, Daniel Shouval. *J Hepatol.* 2021 Apr; 74(4): 944–951.
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. *Hepatology.* 2020;72(1):287-304. doi:10.1002/hep.31281
4. Cornberg M, Buti M, Eberhardt CS, Grossi PA, Shouval D. EASL position paper on the use of COVID-19 vaccines in patients with chronic liver diseases, hepatobiliary cancer and liver transplant recipients. *J Hepatol.* 2021;74(4):944-951. doi:10.1016/j.jhep.2021.01.032
5. Fix OK, Blumberg EA, Chang KM, et al. AASLD Expert Panel Consensus Statement: Vaccines to Prevent COVID-19 Infection in Patients with Liver Disease [published online ahead of print, 2021 Feb 12]. *Hepatology.* 2021;10.1002/hep.31751. doi:10.1002/hep.31751

The Authors did not mention about pediatric population. If the aim of the paper was to provide an overview regarding only adult patients it should be stated.

We added this paragraph about pediatric population:

Pediatric liver transplantation

Compared to adults, pediatric population have milder disease and rarely require hospitalization. Data from the largest pediatric liver transplantation center in Lombardy, Italy have shown little affection of pediatric liver transplant patients and even suggested that immune suppression might be protective and recommended continuing transplant programs. [1]

A survey was conducted for healthcare professionals across the European reference network on pediatric transplantation (ERN-TransplantChild) showed 12/18 transplant centers reducing usual activity with modification of outpatient visits and incorporating telemedicine tools. Reported cases in the survey did not show any severe cases in pediatric liver transplant recipients. [2]

Another survey of European Liver and Intestine Transplantation Association (ELITA) and European Liver Transplant Registry (ELTR) showed that during the height of pandemic 1% of liver transplant centers selected only children and 1% selected only high urgency children. [3]

An Iranian pediatric study that included 40 newly transplanted liver recipients during the height of pandemic there showed no affected children by COVID-19 and had same conclusion as prior studies promoting continuing regular transplant programs. [4]

A multicenter US study have shown similar results with all pediatric transplant recipients showing mild to moderate presentation (including 10 liver transplant recipients) and this study concluded that COVID-19 in such population may mirror those of immunocompetent children. [5]

A Japanese group had another finding in 20 pediatric liver transplant procedures in COVID-19 era with increased incidence of intraoperative portal vein thrombosis although it was not statistically significant. [6]

In India similar results were reported with one center reported no COVID-19 development in their cohort of 7 recipients during the pandemic and this was attributed to a strict protocol adopted by the hospital there. [7]

1. Nicastro E, Di Giorgio A, Zambelli M, et al. Impact of the Severe Acute Respiratory Syndrome Coronavirus 2 Outbreak on Pediatric Liver Transplant Recipients in Lombardy, Northern Italy. *Liver Transpl.* 2020;26(10):1359-1362. doi:10.1002/lt.25840

2. Doná D, Torres Canizales J, Benetti E, et al. Pediatric transplantation in Europe during the COVID-19 pandemic: Early impact on activity and healthcare. *Clin Transplant*. 2020;34(10):e14063. doi:10.1111/ctr.14063
3. Polak WG, Fondevila C, Karam V, et al. Impact of COVID-19 on liver transplantation in Europe: alert from an early survey of European Liver and Intestine Transplantation Association and European Liver Transplant Registry. *Transpl Int*. 2020;33(10):1244-1252. doi:10.1111/tri.13680
4. Shafiekhani M, Kazemi K, Bahador A, Imanieh MH, Karimzadeh P. Pediatric liver and kidney transplantation in the era of COVID-19: a follow-up study from a tertiary referral center in Iran. *BMC Surg*. 2021;21(1):240. Published 2021 May 11. doi:10.1186/s12893-021-01226-y
5. Goss MB, Galván NTN, Ruan W, et al. The pediatric solid organ transplant experience with COVID-19: An initial multi-center, multi-organ case series. *Pediatr Transplant*. 2021;25(3):e13868. doi:10.1111/petr.13868
6. Yamada M, Funaki T, Shoji K, et al. Do Not Delay: Safe Operation for Pediatric Living-donor Liver Transplantation Programs in the COVID-19 Era. *Transplantation*. 2021;105(3):e39-e40. doi:10.1097/TP.0000000000003594
7. Varma S, Pandey Y, Chikkala BR, et al. Protocol to ensure continued pediatric liver transplantation service during the COVID pandemic and the encouraging outcomes. *Pediatr Transplant*. 2021;25(3):e13991. doi:10.1111/petr.13991