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Commentary

# Taking cognizance of the risks associated with COVID-19, vaccine, and treatment in liver transplant recipients – A commentary on "The urgency of the Covid-19 vaccine in liver transplantation patients: What, how, and when?" [Int. J. Surg. 100 (Suppl) (2022) 106492)]

*Dear Editor,*

With immense interest, we read the publication by Hottua et al. on how COVID-19 vaccination is pivotal in averting early mortality and disease repercussions in liver transplant (LT) recipients [1]. The authors underscored based on the report by Fraser et al. (2020) that COVID-19 was associated with a mortality rate of 19.3% in LT recipients [2]. However, a multi-centric study based on the ELITA-ELTR COVID-19 Registry revealed that the mortality rate of COVID-19 positive LT recipients was strikingly higher – the overall mortality rate was 32.7% and reached 49.2% in subjects with decompensated cirrhosis [3]. In this line, John et al. demonstrated that fully vaccinated LT candidates (those who received two doses of mRNA-1273 (Moderna) or BNT162b2 (Pfizer-BioNTech) vaccine) presented a 64% reduction in COVID-19 infection, 58% reduction in symptomatic COVID-19 and an 87% decrease in COVID-19–associated mortality [4]. Another study showed that receipt of three doses of the BNT162b2 (mRNA) vaccine increased the seropositive rate, prevented the occurrence of COVID-19 infection, and did not cause any serious adverse events in all the solid-organ transplant recipients (SOTR) [5]. An update published on July 11, 2022 on the global COVID vaccination tracker (https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html) showed that 2.13 billion additional doses were given worldwide as compared to 5.26 billion people (68.5%) who had received at least one dose of a COVID-19 vaccine [6].

Saharia et al. showed that even after the third dose of mRNA vaccine in SOTR, optimal antibody response and neutralizing activity were not elicited against the omicron variant; however, the vaccine showed optimal effects against alpha, beta, and delta variants [7]. Recently, the largest breakthrough study on COVID-19 (bCOVID-19) infections in SOTR demonstrated that two doses of mRNA vaccine did not effectively mitigate the adverse effects caused by bCOVID-19 infection as in the non-immunocompromised/immunosuppressed controls, although vaccination still protected SOTR. Hence, to negate the existing naivete' in vaccine management for LT recipients, treatment, type of vaccine, patient's immune response, time, number of doses, targeted variants, and other pertinent factors should be considered [1,8].

As underscored by Hottua et al. that the long-term adverse effects of COVID-19 vaccines should not be overlooked [1]. In this line, a recent study of COVID-19 vaccines indicated cerebral venous sinus thrombosis, Guillain–Barré syndrome (GBS), and inflammation of the cardiac muscle/pericardial sac (myocarditis/pericarditis) were the notable adverse effects [9]. Besides, mRNA vaccines are generally associated with lesser adverse effects when compared to the Janssen/Johnson & Johnson's (Ad26.COV2.S) vaccine. However, the odds ratios for myocarditis and pericarditis were higher for the mRNA vaccines than adenoviral vaccine. Hence, vigilance for concomitant comorbidities such as cardiovascular disease in the LT candidates is highly recommended.

The use of immunosuppressants (such as mycophenolate mofetil/mycophenolic acid, calcineurin inhibitors, or steroids) is the single factor mostly associated with immune dysfunction (seroconversion failure) in COVID-19 vaccinated LT recipients [10]. Taken together, the adverse effects of COVID-19 vaccination are very rare, and the benefits of vaccines continue to outweigh any apparent risks. Besides, appropriate use of immunosuppressants (such as azathioprine or mTOR inhibitors) and/or delaying vaccination of LT recipients by 3–6 months might be effective in attenuating the repercussions of COVID-19 vaccines in LT recipients.

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## Declaration of competing interest

No conflicts of interest to declare.

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