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CORRESPONDENCE

Letter to the editor: Six-month antibody kinetics and durability in liver transplant recipients after two doses of SARS-CoV-2 mRNA vaccination

Anti-spike antibody waning after two doses of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) messenger RNA (mRNA) vaccination among liver transplant (LT) recipients is anticipated, but the peak and decay kinetics might vary by patient phenotype.[1–3] This study evaluated 6-month durability of antibody titers in LT recipients following two-dose homologous mRNA vaccination, focusing on the impact of antimetabolite use.

Adult LT-only recipients without reported SARS-CoV-2 infection who had antibody titers measured at 1 month and 3–6 months following homologous mRNA vaccine series (D2) were included from a national observational study (IRB00248540).[1] Seroconversion was assessed using the Roche Elecsys anti-receptor-binding domain or EUROIMMUN anti-S1 assays.

Peak and longitudinal anti-S1 trajectories were compared using multilevel mixed-effects linear regression with a patient-level random intercept and an interaction between mycophenolate use and time following D2.

Between July 1, 2021, and October 26, 2021, a total of 161 participants received BNT162b2 (47%) or mRNA-1273 (53%) vaccination. Median (interquartile range [IQR]) age was 60 (46–67) years, and most were female (56%). Median (IQR) years since transplant was 6 (3–16). Peri-vaccination immunosuppression regimens included calcineurin inhibitor (87%), antimetabolites (38%), corticosteroids (22%), and mammalian target of rapamycin inhibitor (16%); 20% or 7% received dual (calcineurin inhibitors and steroids) or triple immunosuppression (dual immunosuppression and antimetabolites), respectively.

Overall, 136 of 161 (84%) tested seropositive at a median (IQR) of 30 (28–32) days after D2. Of those with available paired titers, 133 of 149 (89%) were seropositive at 3 months, and 49 of 58 (84%) were seropositive at 6 months following D2. Of the 7 seronegative persons with paired titers, 4 (57%) seroconverted to low-level positive titer by 6 months.[4]

Participants taking mycophenolate were more likely to be seronegative at 1 month (22 of 53 [42%] vs. 3 of 108 [2%]; $p < 0.001$) and 3 months (13 of 50 [26%] vs. 3 of 99 [3%]; $p < 0.001$) following D2. Additionally, participants taking mycophenolate had lower peak antibody levels (−3.47 AU [−5.10, −1.80]; $p < 0.01$), albeit similar rate of decay by 6 months following D2 (difference of +0.14 AU/month [−0.09, 0.37]; $p = 0.24$) (Figure 1).

Seroconversion following two-dose mRNA vaccination in LT recipients was high and persisted for up to 6 months, although with steady decline. Mycophenolate use was negatively associated with sero-response, yet did not impact decay kinetics, implying a mechanism of interference with initial vaccine response rather than accelerated waning. This study was limited by absence of serological testing for viral exposure and an assessment of real-world vaccine efficacy.

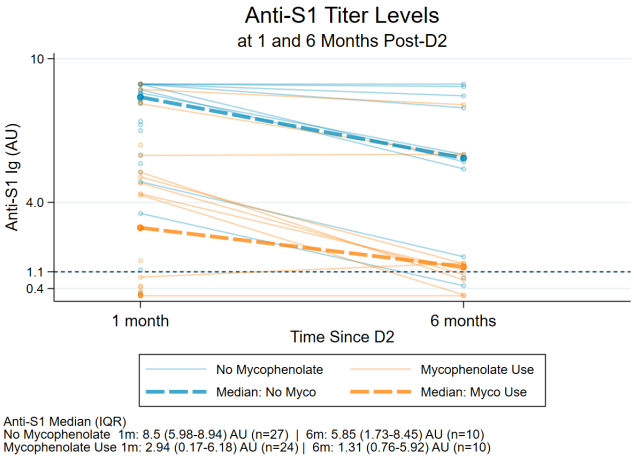

FIGURE 1 Anti-S1 antibody level at 1 month and 6 months following a second messenger RNA (mRNA) severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccine (post-D2), categorized by mycophenolate use in liver transplant recipients. Abbreviation: IQR, interquartile range.

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CONFLICT OF INTEREST

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