Poor durability of the neutralizing response against XBB sublineages after a bivalent mRNA COVID-19 booster dose in persons with HIV (PWH)

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Abstract

We estimated the dynamics of the neutralizing response against XBB sublineages and T cell response in PWH with previous AIDS and/or CD4<200/mm ^{3} receiving the bivalent original strain/BA.4-5 booster dose (bBD) in fall 2022. Samples were collected before the shot (T0), 15 days (T1), 3 (T3), and 6 months (T6) after. PWH were stratified by immunization status: hybrid immunity (HI; vaccination plus COVID-19) vs. non-hybrid immunity (nHI; vaccination only). At T1, 16% and 30% of PWH were non-responders in terms of anti-XBB.1.16 or anti-EG.5.1 nAbs, respectively. At T3, a significant waning of anti-XBB.1.16, EG.5.1 and -XBB.1 nAbs was observed both in HI and nHI but nAbs in HI were higher than in nHI. At T6 both HI and nHI individuals displayed low mean levels of anti-XBB.1.16 and EG.5.1 nAbs. Regarding T cell response, IFN-γ values were stable over time and similar in HI and nHI. Our data showed that in PLWH, during the prevalent circulation of the XBB.1.16, EG.5.1, and other XBB sublineages, a bBD mRNA vaccine might not confer broad protection against them. With a view to the 2023/2024 vaccination campaign, the use of the monovalent XBB.1.5 mRNA vaccine should be urgently warranted in PWH to provide adequate protection.

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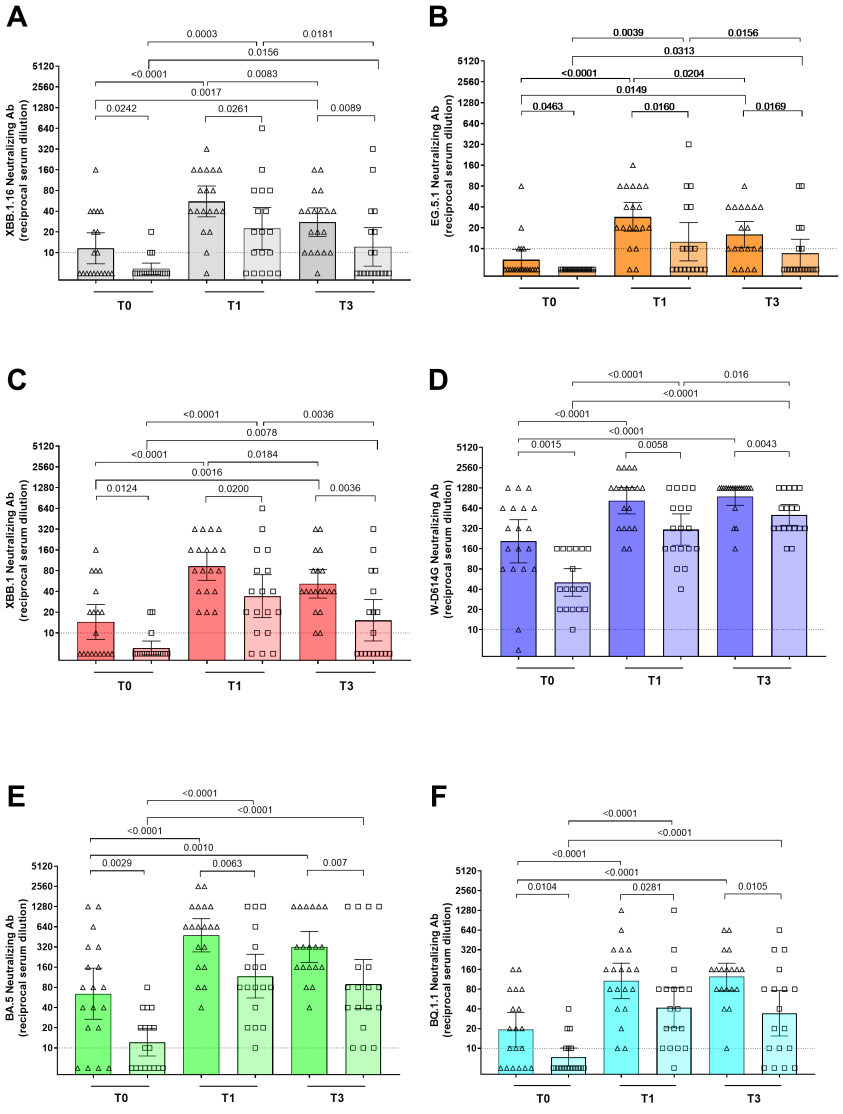

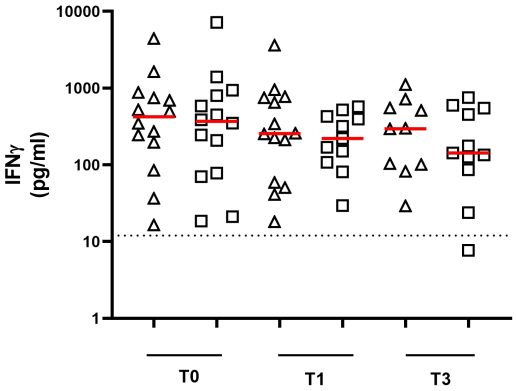

Median	422.8	221.0	368.1	294.4	256.3	142.6
IQR	168.8	107.8	76.2	82.3	56.9	86.3
	779.2	427.7	835.5	552.4	755.8	549.6