SARS-CoV-2antibody levels after vaccination and booster in different vaccination regimens

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BACKGROUND

Vaccination against SARS-CoV-2 is the most important tool for ending the current pandemic. For various reasons, vaccination often cannot be carried out as it was in the clinical trials and when the vaccines were approved. Furthermore, a decrease in antibody titres with increasing duration after vaccination is observed, leading to an increasing number of requests for testing for specific antibodies. There are few data available on the expected antibody titer development.

METHODS

63 employees of a medical laboratory agreed to blood collection less than 1 week before vaccination, 2 and 4 weeks after the first and second vaccination and additional time-points 6 months after second vaccination and 2 and 4 weeks post booster-vaccination. Samples were tested for IgG antibodies against SARS-CoV-2 spike protein (DiaSorin LIAISON® SARS-CoV-2 TrimericS IgG). The vaccination regimens were predominantly AstraZeneca (Vaxzevria®) as first vaccine with Biontech/Pfizer (Comirnaty®) as second (A/B; n=36), followed by Biontech/Pfizer twice (B/B; n=24), and AstraZeneca twice (A/A; n=3). 3rd dose given was always the Biontech/Pfizer vaccine

RESULTS

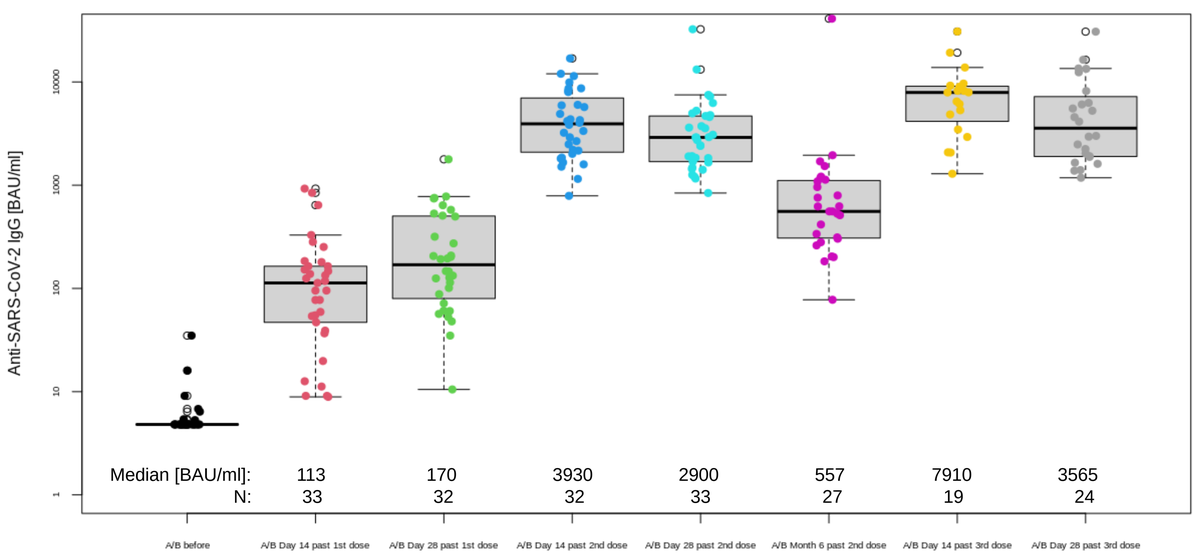

Fig. 1: Box-Plot for AstraZeneca/Biontech/Pfizer A/B timepoints after vacination

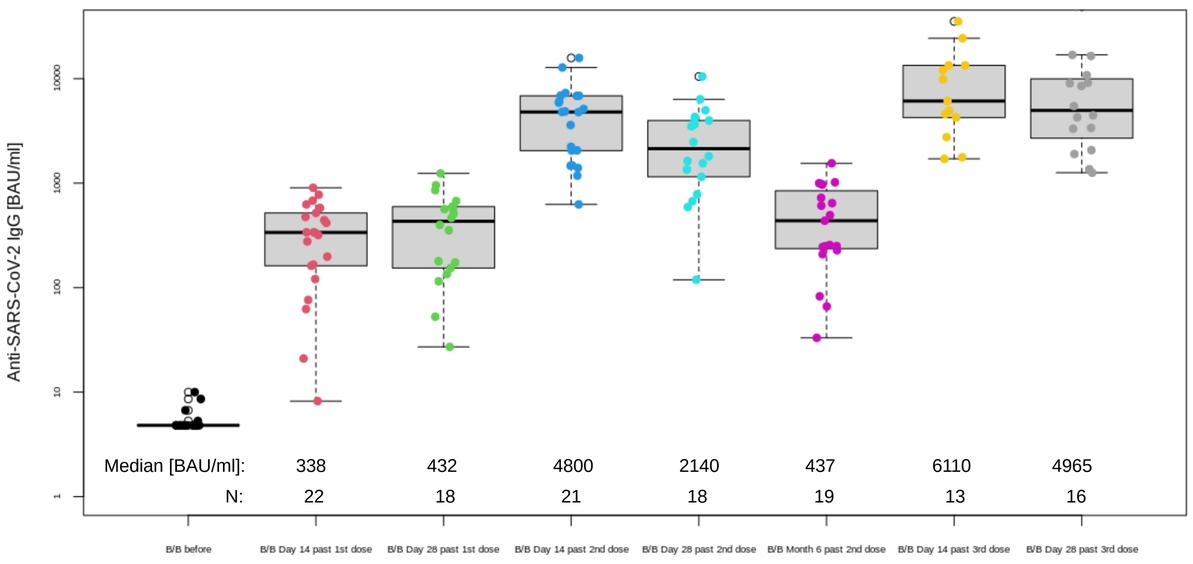

Fig. 2: Box-Plot for Biontech/Pfizer twice B/B timepoints after vacination

Tab. 1: Antibody titers in different regimens: AstraZeneca/Biontech/Pfizer A/B; Biontech/Pfizer twice B/B; AstraZeneca twice A/A

Collection timepoint	A/B	B/B	A/A
Before vacc.	6.3	4.81	4.81
Day 14 past 1st vacc.	113	338	47
Day 28 past 1st vacc.	170	432	168
Day 14 past 2nd vacc.	3930	4800	337
Day 28 past 2nd vacc.	2900	2140	289
Month 6 past vacc.	557	437	
Day 14 past 3nd vacc.	7910	6110	
Day 28 past 3nd vacc.	3565	4965	

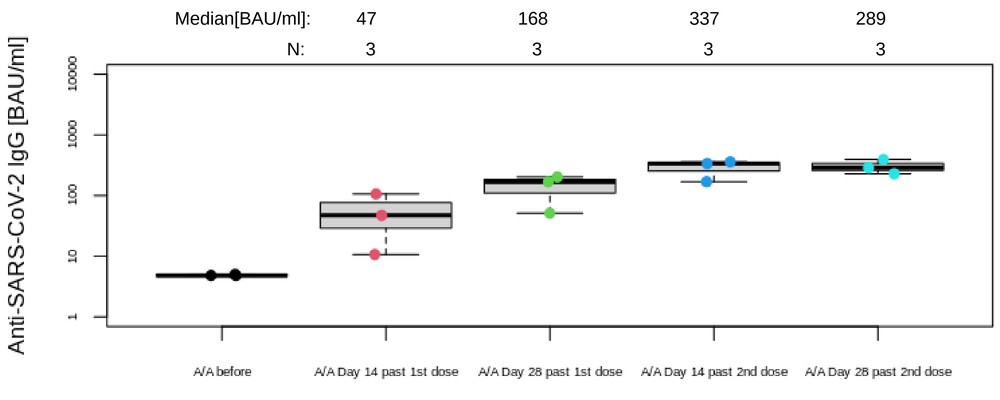

Fig. 3: Box-Plot for AstraZeneca wice A/A timepoints after vacination

RESULTS

Mean age of participants was 42 years (youngest: 21, oldest 74). Antibody-titers are in figures 1 to 3 and in table 1. The three participants in the A/A regimen were boosted before reaching six months after the second vaccination. The differences between regimens A/B and A/A or B/B and A/A were significant at 28 days past 2nd vaccination. After 3rd vaccination dose, no significant differences were observed.

CONCLUSIONS

The SARS-CoV-2 TrimericS IgG test is a good way to monitor antibody titers after vaccination. The titer levels are determined by the vaccination scheme and were significantly higher with at least one m-RNA vaccine after the first two doses. This effect could not be shown at the timepoint of 3rd vaccination.