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

PP-221

Robert Ehret, Juliane Geisler, Dennis Wendenburg, Daniela Budach, Christina Pappa and Martin Obermeier

Medical Center for Infectious Diseases, Berlin

Contact: obermeier@mvz-mib.de

BACKGROUND

Vaccination against SARS-CoV-2 is the most important tool for controlling the current pandemic. For various reasons, vaccination often cannot be delivered as it was in the clinical trials and when the vaccines were licensed. In addition, a decrease in antibody titres with increasing duration after vaccination can be observed. This leads to an increasing number of requests for tests for specific antibodies, which can then be a decision-making aid for possibly necessary booster vaccinations . There is little data available on the expected development of the antibody titre.

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

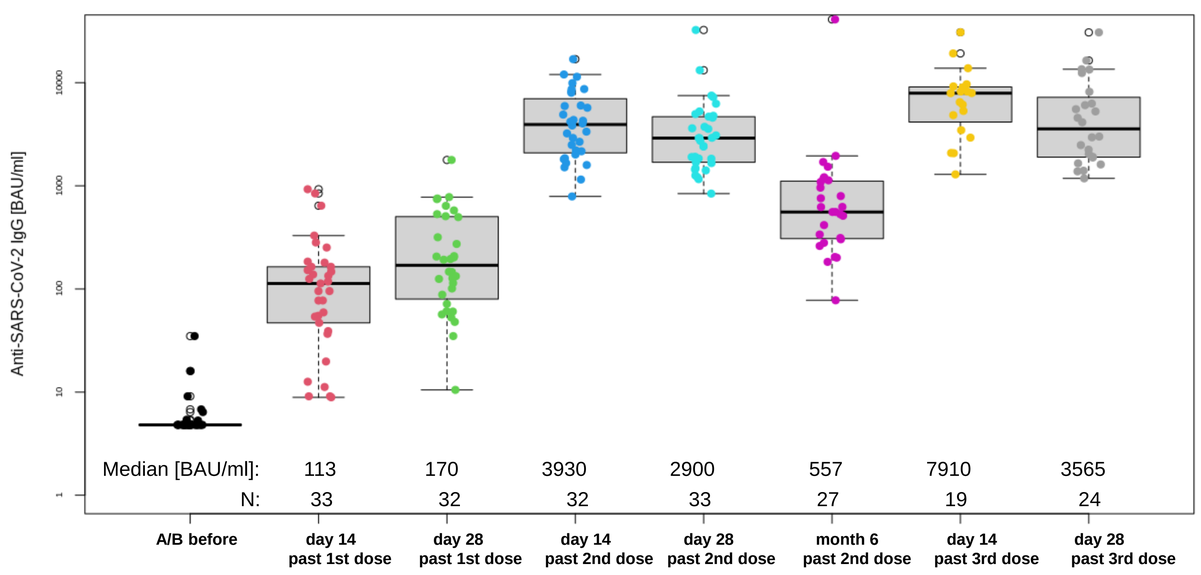

Fig. 1: Box-Plot for AstraZeneca/Biontech/Pfizer A/B time-points after vaccination

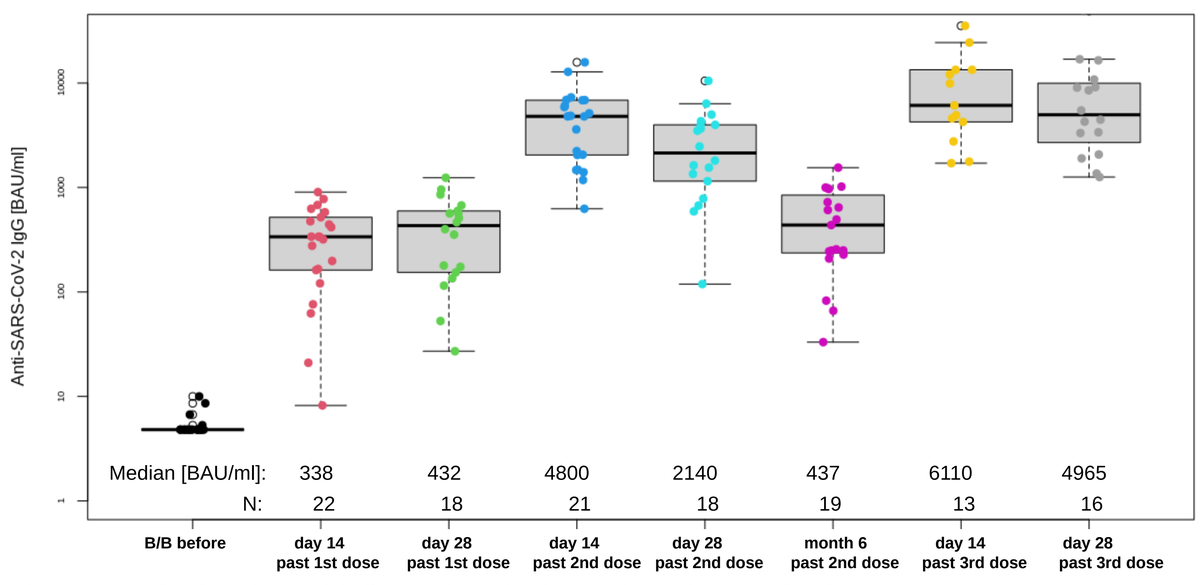

Fig. 2: Box-Plot for Biontech/Pfizer twice B/B time-points after vaccination

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

Collection time-point	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	

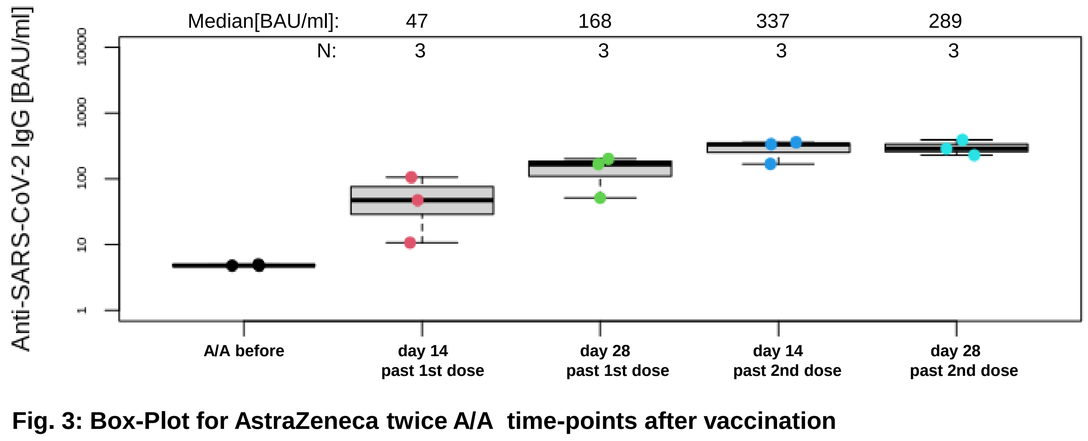

Fig. 3: Box-Plot for AstraZeneca twice A/A time-points after vaccination

RESULTS

Mean age of participants was 42 (youngest 21, oldest 74). Mean antibody titres increased from 5.9 BAU/ml before vaccination to 113 (A/B), 357 (B/B) and 55 BAU/ml (A/A) 14 days and 170, 445 and 140 BAU/ml 28 days after first vaccination. 14 days after second vaccination the titres were 3930, 4959 and 289 BAU/ml. At 28 days post second vaccination the titres were: 2900, 3109 and 303 BAU/ml for A/B, B/B and AA, respectively. Participants in A/A regimen were boosted before six months after 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 (booster)-vaccination, no significant differences were observed.

CONCLUSIONS

The SARS-CoV-2 TrimericS IgG test is a good tool for monitoring antibody titres after vaccination. Titre levels are determined by the vaccination schedule and were significantly higher after the first two doses if m-RNA vaccine was used at least once. Since the third (booster) -vaccination was always with an RNA vaccine, this effect could not be followed up.