

Publication by a BBMRI.at partner with biobank involvement

Comparison of automated SARS-CoV-2 serology assays in assessing virus neutralization capacity

Arch Pathol Lab Med. 2022, Feb 2022

BBMRI.at partner Biobank Graz together with researchers at Med Uni Graz, have established several different COVID-19-related sample cohorts. One of these, the ["COVID-19 Convalescent Cohort"](#), the researchers and biobankers used in a study on the comparison of automated SARS-CoV-2 serology assays. A scientific paper is now published in Arch Pathol Lab Med., Feb 2022.

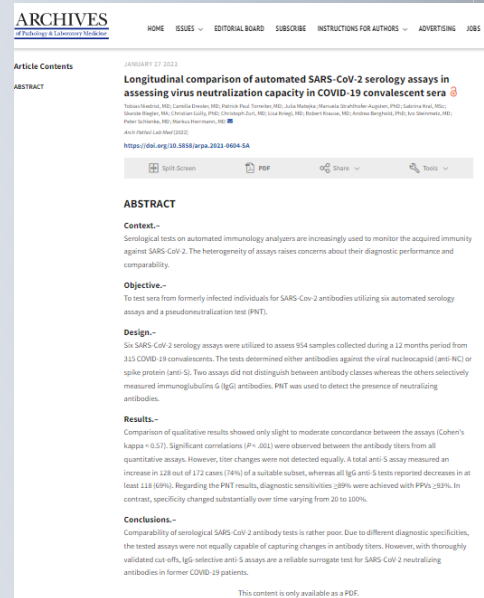
Serological tests on automated immunology analyzers used to monitor the acquired immunity against SARS-CoV-2 often show heterogeneous results. Researchers from BBMRI.at partner Med Uni Graz with Biobank Graz involvement, therefore, analysed six different SARS-CoV-2 serology assays concerning their diagnostic performance and comparability in sera from COVID-19 convalescents.

The results revealed that the different serological SARS-CoV-2 antibody tests were poorly comparable. Biggest discrepancies were observed in detecting antibody titer changes.

However, these tests are still a reliable surrogate test for SARS-CoV-2 neutralizing antibodies in patients recovered from COVID-19 with an appropriate validation.

[Read details in the original article>](#)

Niedrist T, Drexler C, Torreiter PP, Matejka J, Strahlofer-Augsten M, Krat S, Riegler S, Güllly C, Zurl C, Kriegl L, Krause R, Berghold A, Steinmetz I, Schlenke P, Herrmann M.
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Longitudinal comparison of automated SARS-CoV-2 serology assays in assessing virus neutralization capacity in COVID-19 convalescent sera

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ABSTRACT

Context.
Serological tests on automated immunology analyzers are increasingly used to monitor the acquired immunity against SARS-CoV-2. The heterogeneity of assays raises concerns about their diagnostic performance and comparability.

Objective.
To test sera from formerly infected individuals for SARS-CoV-2 antibodies utilizing six automated serology assays and a pseudoneutralization test (PNT).

Design.
Six SARS-CoV-2 serology assays were utilized to assess 954 samples collected during a 12 months period from 315 COVID-19 convalescents. The tests determined either antibodies against the viral nucleocapsid (anti-NC) or spike protein (anti-S). Two assays did not distinguish between antibody classes whereas the others selectively measured immunoglobulins G (IgG) antibodies. PNT was used to detect the presence of neutralizing antibodies.

Results.
Comparison of qualitative results showed only slight to moderate concordance between the assays (Cohen's kappa = 0.37). Significant correlations ($P < .001$) were observed between the antibody titers from all quantitative assays. However, clear changes were not detected equally. A total anti-S assay measured an increase in 128 out of 172 cases (74%) of a suitable subset, whereas all IgG anti-S tests reported decreases in at least 118 (69%). Regarding the PNT results, diagnostic sensitivities >80% were achieved with PPVs >93%. In contrast, specificity changed substantially over time varying from 20 to 100%.

Conclusions.
Comparability of serological SARS-CoV-2 antibody tests is rather poor. Due to different diagnostic specificities, the tested assays were not equally capable of capturing changes in antibody titers. However, with thoroughly validated cut-offs, IgG selective anti-S assays are a reliable surrogate test for SARS-CoV-2 neutralizing antibodies in former COVID-19 patients.

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