Evaluation of three commercial varicella-zoster virus IgG enzyme-linked immunosorbent assays in comparison to the fluorescent-antibody-to-membrane-antigen test.


Abstract

Commercial serologic assays for varicella-zoster virus (VZV), which enable reliable determination of VZV immune status and are amenable to automation, are needed. The present study compares the automated performance of the VZV whole-cell enzyme-linked immunosorbent assay (ELISA) Enzygnost anti-VZV/IgG, the Euroimmun anti-VZV ELISA (IgG) based on highly purified viral proteins, and the VZV glycoprotein (gp)-based Serion ELISA Classic VZV IgG. The fluorescent-antibody-to-membrane-antibody (FAMA) test was used as a reference. A total of 638 serum samples from VZV-negative children, blood donors, varicella vaccinees, and bone marrow transplant recipients were included. The Enzygnost anti-VZV/IgG and the Serion ELISA Classic VZV IgG showed sensitivities of 99.6% and 99.2%, respectively, and the Euroimmun anti-VZV ELISA (IgG) had a significantly lower sensitivity of 90.5%. Specificity was calculated as 100% for both the Euroimmun anti-VZV ELISA (IgG) and for the Enzygnost anti-VZV/IgG, and the Serion ELISA Classic VZV IgG had a significantly lower specificity of 89.4%. Quantitative results of all ELISAs correlated well, but there was a poor quantitative correlation between the ELISAs and FAMA. In conclusion, this study does not show any superiority of a gp- and a protein-based ELISA compared to a whole-cell ELISA for the automated detection of VZV-specific IgG. The automated performance of the Enzygnost anti-VZV/IgG assay correlated best with the FAMA reference assay.

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