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PATTERN OF EPITOPE - SPECIFIC IGG RESPONSE AGAINST CMV IN PCR POSITIVE AND NEGATIVE SAMPLES

V. Loparev', A. Obriadina², T. Ulanova', N. Sviridova', V. Puzyrev', E. Mafveeva', A. Burkov' 'CDC, Atlanta, GA, USA; ²Research -Production Company "Diagnostic Systems", Russia

The purpose of this study was to evaluate the diagnostic relevance of a set of 7 recombinant proteins and 10 corresponding synthetic peptides. Polypeptides were designed for the detection of an antibody to the HCMV and further investigation of the anti-CMV IgG epitope-specific patterns during the different steps of a CMV infection. Seven fragments of CMV proteins: pp150-1/UL32 (595-614 aa), pp150-2/UL32 (595-636 aa), pp65/UL83 (297-510 aa), PP52/UL44 (266-293 aa), pp38/UL80a (117-373 aa), pp28/UL99 (130- 160 aa), and AD2(gB)/UL55 (11-67 aa) were expressed in E.coli and tested individually by enzyme immunoassay. Additionally, 10 synthetic peptides corresponding to sequences of pp52, pp28 and AD2 were also tested. A panel of 16 CMV-DNA PCR positive, 24 PCR-negative samples and sera from healthy normal blood donors (N=146) were analyzed. The range of IgG anti-CMV activities in PCR positive human serum specimens varied from 25% (pp28 and AD2) to 81.3% (pp150-2) for each protein and from 11,1% to 56.3% for synthetic peptides. Of the 24 PCR negative samples IgG activity ranged from 12.5% to 45.8% for recombinant proteins. In pairwise comparisons of different tests the overall concordance ranged from 26.4% to 92.7% and the concordance among PCR positive reactive sera ranged from 33.3% to 80%, among PCR negative reactive sera from 7.7% to 66.6%. The pattern of signal/cutoff values obtained against an array (whole set) of recombinant proteins and synthetic peptides was analyzed. Epitope - specific distribution of IgG activity was significantly different for CMV-DNA PCR positive and negative samples (correlation between curves was 0.02). We can accurately discriminate PCR positive and PCR negative samples (with accuracy of prediction 97.1%) with using of pattern diagnostics.. Five out of 16 normal blood donors with previously unknown PCR status were tested and found to be PCR positive using this epitope-specific distribution of IgG activity. Our data demonstrate a number of specific epitopes involved in anti CMV IgG response. In absence of a currently accepted gold standard pattern diagnostics kit, this may be a potential tool for serodiagnostics of HCMV infection.