Differential antigen-processing pathways of the hepatitis B virus e and core proteins

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BACKGROUND & AIMS: Hepatitis B e antigen (HBeAg) and hepatitis B core antigen (HBCAg) seem to play different roles in the induction and regulation of the antiviral immune response, although the two antigens share all major CD4 (+) T-cell epitopes, and these epitopes can be processed from both antigens via the exogenous antigen-presenting pathway. The aim of this study was to test the ability of antigen-presenting cells to present epitopes from endogenously synthesized HBCAg/HBeAg on HLA class II molecules. METHODS: Lymphoblastoid cell lines infected with recombinant vaccinia viruses containing various HBCAg or HBeAg constructs and stable transfectants were tested for their ability to stimulate HBCAg/HBeAg-specific CD4(+) T-cell clones. RESULTS: Only antigen-presenting cells infected with HBeAg constructs but not those infected with HBCAg constructs were able to stimulate HBCAg/HBeAg-specific CD4(+) T-cell clones. T-cell activation by HBeAg constructs was completely inhibited by brefeldin A but not affected by chloroquin. In contrast, T-cell activation by exogenous, recombinant HBCAg was inhibited by chloroquin but not by brefeldin A. CONCLUSIONS: The findings indicate that processing and HLA class II-associated presentation of endogenously synthesized HBeAg in virus-infected cells, including hepatocytes, may occur. This mechanism may be involved in the regulation of the CD4(+)-T-cell response to HBCAg/HBeAg.