Decades after recovery from hepatitis B and HBsAg clearance the CD8+ T cell response against HBV core is nearly undetectable.

Abstract:
CD8(+) T cells are an essential component of a successful immune response against hepatitis B virus (HBV). Patients who spontaneously clear HBsAg after acute HBV infection have a strong CD8(+) T cell immune response, predominantly directed against the HBV core protein (HBcAg). However, the fate and phenotype of HBcAg-specific CD8(+) T cells after immune control are unclear. The CD8(+) T cell immune response against HBV core was determined in 65 patients with chronic HBV infection, 16 patients after recovery from acute HBV infection, and four patients with acute HBV infection utilizing overlapping peptides and HLA class I/peptide-multimers. Patients who had cleared HBsAg >30 years ago had significantly weaker CD8(+) T cell responses after antigen-specific expansion compared to patients who had cleared the virus 30 years ago had less HBV-specific CD8(+) T cells compared to patients with HBeAg negative chronic infection (p=0.0025). In patients with acute HBV infection, the frequency of HBc-specific CD8(+) T cells continued to decline after clearance of HBV-DNA and HBsAg even at a time when ALT levels had already normalized (p=0.0313). The frequency of HBcAg-specific CD8(+) T cells continuously declines after
HBsAg clearance. In line with clinical observations, this suggests that humoral and not CD8(+) T cell immune responses mainly contribute to prevention of HBV reactivation decades after HBsAg clearance.