Low-density lipoprotein receptor (LDLR) variants are associated with spontaneous and treatment-induced recovery from hepatitis C virus infection.

Abstract:
Low-density lipoprotein receptor (LDLR) is involved in the entry of hepatitis C virus (HCV) in host cells. We investigated whether three single-nucleotide alterations within LDLR might be associated with the course of hepatitis C infection and response to antiviral therapy. We enrolled 651 individuals with chronic HCV infection who had received interferon-based combination therapy, 174 individuals with self-limited HCV infection, and 516 healthy controls. LDLR c.1171G>A, c.1413G>A, and c.*52G>A genotyping was performed by real-time PCR-based assays. HCV genotype 1-infected individuals who were homozygous for 3'UTR c.*52G were at increased risk for virologic non-response to antiviral therapy compared to virologic responders (66.3% vs. 51.0%, p=0.001). Furthermore, compared to healthy controls, self-limited HCV genotype 1 infection was significantly associated with c.1171A (15.1% vs. 6.6%, p=0.006) and negatively associated with c.1413G>A heterozygosity (33.0% vs. 46.1%, p=0.023). The data indicate that LDLR alterations are correlated with response to interferon-based combination therapy and with self-limitation of HCV 1 infection.