New Strategies to Increase the Cure of HBV infection

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Chronic hepatitis B virus (HBV) infection is a major global health problem especially in the Asia-Pacific region where more than 40 countries are encompassing a wide geographic area with a large population. It may cause progressive liver fibrosis leading to cirrhosis with end-stage liver disease, and a markedly increased risk of hepatocellular carcinoma (HCC).

Substantial progress has been made in the treatment of hepatitis B in the last two decades. There are currently seven approved drugs for the treatment of chronic hepatitis B: two formulation of interferon (IFN)-conventional and pegylated IFN, and five nucleos(t)ide analogues-lamivudine, telbivudine, adefovir, entecavir and tenofovir.

However, although suppression of HBV replication is achieved in the majority of patients with currently available antiviral therapies, HBsAg loss is rarely achieved in Asians despite many years of antiviral treatment (only less than 10% of HBsAg loss in 5 years).

Several attempts to improve HBsAgseroclearance have been investigated, includingextending pegIFN therapy to 96 weeks, adding pegIFN to NA therapy, and switching NA to pegIFN therapy, yet the results are still far from satisfactory. Therefore, there has been a great interest to investigate various steps in the HBV replication cycle and specific virus-host interactions as potential targets for new antivirals.

Recently, new therapeutic modalities to achieve eradication of the virus from chronically infected patients have been introduced, including targeting the viral and/or host factors required for viral infection.These include various therapeutic vaccines, si-RNA, TLR-7 agonists, HBV receptor blockers, HBsAg secresiton blockers, recombinant immunoglobulin.

The addition of one or several new compounds to current regimens could improve the rate of HBsAg loss markedly in the near future. Here, we will review the newly investigated therapeutic compounds and the results of preclinical and/or clinical trials.