The evaluation of antiviral treatment efficacy and cost-effectiveness analysis of chromic hepatitis B and C after reimbursement from the Bureau of Nation Health Insurance (BNHI): A multi center study

Abstract:

Chronic viral hepatitis is an important health problem in Taiwan. Chronic hepatitis B virus infection is the main cause. Among the hepatitis B carriers, about 60% patients remain healthy and asymptomatic, even to the end of their life. In contrast, some of the other carriers developed bouts of hepatitis activity, progressed to liver cirrhosis at different speed, and eventually some into liver cancer or other end-stage liver diseases. Chronic hepatitis C virus infection is the second most common cause of chronic liver disease in Taiwan. For hepatitis C infection, around 20-30 % completely recover from acute infection but around 70%~80% become persistently infected. Among the chronic infected patients, 20-30% are at risk of progression into end-stage liver diseases and liver cancer.

Although previous studies clearly demonstrated that in those who successfully controlled or eradicated the virus, the risk of progression into liver cirrhosis or developing hepatocellular carcinoma decreased, the data were mostly derived from clinical trials. Whether similar benefit could be obtained in the general chronic viral hepatitis patients remains to be examined. In addition, the costs of the relating treatment are relative expensive, the cost-effectiveness of the regimens is left to be studied.

Taking advantage of the reimbursement program from the Bureau of National Health Insurance to treat chronic hepatitis B and C, we investigated the treatment efficacy of this National treatment plan. Using loss of HBeAg and HBeAg seroconversion as evaluation endpoint for those with HBeAg, we found around 52% rate of losing HBeAg and 38% HBeAg seroconversion among those hepatitis B patients treating with Lamivudine. Among hepatitis C patients using Peginterferon with ribavirin, approximately 57% of them remained normal at both tests (sustained biochemical response). Among 137 with complete virological information, the sustained viral response rate was 72%, with genotype 1 much lower than genotype non-1 (67% vs. 85%). This large population study showed similar treatment efficacy to various smaller scale clinical trials.

The cost-effectiveness analysis showed that the ICER for HBeAg-positive chronic hepatitis B patients treated with lamivudine is 225,880 NTD/QALY; and the treatment strategy that use pegylated interferon combined with ribavirin in chronic hepatitis C is a dominant alternative. There still is no consensus on the cost-effectiveness threshold for the BNHI reimbursement system in Taiwan nowadays. However, according to the common cited threshold levels in the US, Canada, UK, Australia and the 3 times of the per capital GDP recommendations for less developed contries made by World Health Organization, the ICER in lamivudine treatments could be considered cost-effective in rigorous standards. Subgroup analyses suggested the cost-effectiveness is comparable across different age groups, either in HBeAg-positive chronic hepatitis B patients or in chronic hepatitis C patients.

Key word: hepatitis B, hepatitis C, treatment, efficacy, reimbursement, cost-effectiveness analysis