Estimating the Future Health Burden of Chronic Hepatitis B and the Impact of Therapy in Spain

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Background: Chronic hepatitis B virus (HBV) infection can lead to fatal complications and death. Only a relatively small proportion of patients actually receive medication, and the majority requires long-term antiviral therapy that can result in the emergence of resistant strains of HBV. The study aimed to estimate the future burden of chronic hepatitis B in Spain over the next 20 years, the impact of current lamivudine treatment and the emergence of drug-resistant HBV.

Methods: We constructed a hypothetical cohort of people with active chronic HBV infection in Spain in 2005, and 'followed' the cohort for 20 years. The cohort was stratified with respect to factors that affect prognosis (i.e. hepatitis B e-antigen and histology-defined status). To estimate the burden, Markov mathematical simulation was performed based on three scenarios: natural history, treatment with antiviral drug (lamivudine) and treatment with a hypothetical drug with identical profiles to lamivudine but to which there is no resistance.

Results: We estimated that in 2005 there were around 111,000 individuals suffering from active chronic HBV infection. If the cohort is not treated, by the year 2025 there will be about 60,000 events of morbidity and 40,000 cases of liver-related deaths, with 1.84 billion euros expected to be consumed in providing care for the cohort. Treating 35% of the cohort with lamivudine will reduce the morbidity and mortality by 19 and 15%, respectively; whereas the hypothetical drug will reduce the morbidity and mortality by 27 and 24%. The cumulative cost savings resulting from the use of lamivudine and the hypothetical drug, respectively, are 160 and 300 million euros. Antiviral resistance accounts for a reduction of about one-third in the potential benefit of treatment, and almost a half of the potential cost saving.

Conclusion: Chronic hepatitis B will pose a great burden in the future if the individuals with active disease are left untreated. Effective antiviral therapy and treatment coverage have substantial impact in reducing the future burden; however, antiviral resistance decreases treatment benefit considerably.