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Lamivudine Resistance in Children with Chronic Hepatitis B

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Abstract

Currently, although lamivudine (LAM) has a low genetic barrier, only interferon-alpha (IFN-alpha) and LAM are available as a first-line treatment in children with chronic hepatitis B (CHB). Lamivudine is a potent inhibitor of hepatitis B virus-deoxyribonucleic acid (HBV-DNA) polymerase replication by termination of the proviral HBV-DNA chain. Lamivudine has a good safety and tolerability profile in CHB patients with hepatic decompensation. However, the main disadvantages of this HBV reverse transcriptase inhibitor are: 1) pre-existing covalently closed circular DNA (cccDNA) cannot be eradicated by lamivudine, thus relapse after therapy withdrawal is frequent; and 2) although the longer LAM treatment induced the higher seroconversion rate, the risk of viral resistance increased through the selection of YMDD (tyrosine, methionine, aspartate, aspartate) motif. Insufficient suppression of viral replication leads to the emergence of resistant strains that could result in virological breakthrough which is usually followed by biochemical breakthrough. Mutant strains affects additional resistance and cross resistance, leading to drug resistance in a significant number of CHB patients. In this case, efficacy of more powerful anti-viral agents with higher genetic barrier