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The impact of toll-like receptor 9 polymorphisms on hepatitis B virus clearance

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Statement of the Problem: Hepatitis B infection remains a serious public health problem in the world. In connection with poorly defined defects affecting their immune competence, patients chronically infected with hepatitis B virus (HBV) cannot clear the virus. The outcome of infection depends primarily on the interaction between the virus and selected effectors of host immunity. Toll-like receptor 9 (TLR9) plays a crucial role in innate immunity against viral infections through detection of intra-cytoplasmic dsDNA. Defects in this system may result, therefore, in attenuated responses against HBV. Recent research has focused on the possibility of targeting the defects in TLR9 pathway as a novel approach for anti-HBV treatment. Our study aimed to assess the impact of both TLR9 rs5743836 and rs187084 polymorphisms on spontaneous HBV clearance in Moroccan patients.

Material/Methods In this study, 239 chronic HBV (CHB) patients and 134 spontaneously resolved HBV (SRB) individuals were recruited and genotyped using a Taqman allelic discrimination assay.

Results: Remarkably, we observed dosage effect of both SNPs on viral loads. At rs5743836, AA, AG and GG genotypes were significantly associated with a progressive increase of circulating HBV DNA whereas the inverse phenomenon was noticed with AA, AG and GG at rs187084. By contrast, there was no consistent association between TLR9 polymorphisms and spontaneous clearance or persistence of HBV.

Conclusion: To conclude, of Moroccan patients, no significant association of rs5743836 and rs187084 TLR9 polymorphisms was observed with HBV natural clearance. Further studies on larger populations should shed light on the modulating effect of TLR9 polymorphisms on HBV loads that remain a viral factor of paramount importance to predict HCC development.

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