Hepatitis G virus Infection in Patients on Maintenance Hemodialysis

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Background and Aims : Patients on chronic hemodialysis are at high risk of acquiring blood-born infections such as hepatitis B and C. Besides the known hepatitis viruses(hepatitis A-E), the etiology of a substantial fraction of hepatitis cases remains undefined. In 1967 a GB hepatitis agent isolated from a surgeon with acute hepatitis has turned out to be three novel RNA viruses of the Flaviviridae family, hepatitis GB virus A(HGBV-A), hepatitis GB virus B (HGBV-B), and hepatitis GB virus C(HGBV-C). After then hepatitis G virus (HGV) has been isolated from a patient with chronic hepatitis. It has been suggested that HGBV-C and HGV are closely related to the same virus because of homology of nucleotide sequence and amino-acid sequence alignment between HGV and HGBV-C. HGV is known to be parenterally transmitted and has been detected in several patients with hepatitis. However, a few report exists about the prevalence of HGV infection in patients on chronic hemodialysis. Also, the control efforts to reduce the spread of HBV and HCV in dialysis units have had a beneficial impact on the management of patients on hemodialysis. However, the exact impact of chronic HGV infection in patients on hemodialysis was unclear, and the question of the risk of transmission HGV within dialysis units is stilll unsettled, and thus recommendations about isolation of HGV-infected patients are not possible.

The aims of this study was to investigate the prevalence of HGV infections in three dialysis centres and analyze the risk factors and the impact of HGV infection and to compare the differences of HGV strain between each center.

Methods : Control group comprising randomly chosen 50 blood donors was enrolled in the study. 154 patients on chronic hemodialysis over 3 months were tested from A, B, C centers(A : n=43, B : n=47, C : n=64). Data on sex, age, cause of end-stage renal disease, time on hemodialysis, history and number of transfusions, history of kidney transplantation, medication history of immunosuppressive agents, and serum levels of alanine aminotransferase while on hemodialysis

were retrospectively evaluated. Hepatitis B markers were assayed by radioimmunoassay and anti-hepatitis C antibody was assayed by a second-generation ELISA test kit. HGV-RNA and HCV-RNA were detected by reverse transcriptase polymerase chain reaction(RT-PCR). Difference of HGV strains was analyzed by restriction fragment length polymorphism(RFLP).

Results : HGV RNA was detected in 1(2%) of 50 controls and 24(15.6%) of 154 patients on maintenace dialysis (16.3 %, 21.2 %, and 10.9 % in A, B, and C center respectively). There were no significant differences between HGV positive and negative patients on maintenace hemodialysis with regard to demographic, biochemical and virological features. There were no significant differences among 3 dialysis centres for above variables. 21(87.5%) of 24 HGV RNA-positive patients had the history of blood transfusion. 4(18.2%) of 22 HGV RNA-positive, HBsAg-negative, and anti HCV antibody-negative patients showed raised aminotranferase values in serum. 20(18.9%) of 106 HGV RNA-negative, HBsAg-negative, and anti HCV antibody-negative patients showed raised aminotranferase values in serum. Two HGV RNA-positive patient had co-infection with HBsAg and HCV respectively. There was no significant difference in HGV strains by RFLP among 3 dialysis centres.

Conclusion : Patients on maintenace hemodialysis are at increased risk of HGV infection. HGV may be transmitted by blood transfusions but transmission routes other than transfusion are possible.