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ABSTRACTS

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Molecular Profile of Hepatocellular Carcinoma in India with Special Reference to GST gene Polymorphism

Premashis Kar, Manash Pratim Sarma, Mohammad Asim

Maulana Azad Medical College, University of Delhi, India

Introduction: Studies investigating the associations between glutathione S-transferase (GST) genetic polymorphisms and hepatocellular carcinoma (HCC) risk have reported controversial results.

Objective: The study was designed to evaluate whether the association of GSTM1/T1 gene polymorphisms modifies the risk of Hepatocellular carcinoma (HCC) and what is its correlation with other predisposing risk factors like Aflatoxin B1, alcohol intake, cigarette smoking and hepatitis B and C infections.

Study Design/Setting: It was a case-control study which included 302 HCC cases compared with 404 hospital-based age and sex matched cases of chronic liver disease without HCC which served as controls from Indian population. The GSTM1 and GSTT1 genotypes were detected using conventional multiplex PCR method. The levels of Aflatoxin B1 (AFB1)-N7-guanine adducts in the urine samples collected at the recruitment of patients was examined by competitive enzyme-linked immunosorbance assay.

Results: In this case-control study, there was a positive correlation between age, Aflatoxin B1, HBV and HCV infection, smoking habit of >20 packs/year, alcohol consumption of >100 g/day and risk of liver cancer. There was also evidence of association with GSTM1 null genotype (OR=3.49; 95% CI = 2.52 – 4.84) as well as GSTT1 null genotype (OR=3.12; 95% CI=2.19 – 4.45), respectively. The biological gradients between urinary AFB1-N7-guanine adducts level and HCC risk were observed among HBV patients who had null genotypes of GSTM1 and/or T1 but not among those who had non-null genotypes. However, an increased risk of HCC was observed among heavy drinkers with GSTM1 (OR=2.01; 95% CI =1.11-3.66). Further, cigarette smoking showed a non-significant association with GSTT1 (OR=1.49; CI=0.69-3.25).

Conclusion: The results suggest that the variant in low penetrance gene such as GSTM1 and GSTT1 is associated with an increased risk of liver cancer. The influence of GSTM1/T1 null genotypes may contribute in the etiology of HCC in patients with higher levels of AFB1-N7-guanine adducts, who are heavy smokers and those who consume alcohol.