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CORRESPONDENCE

Isolated antibody to hepatitis B core is associated with hepatitis C virus co-infection

Jilg et al. [1] have previously shown that subjects with antibody only to hepatitis B core (anti-HBc alone) were more often co-infected with hepatitis C (HCV) (49%) than were subjects who also had antibodies to hepatitis B surface antigen (anti-HBs) in addition to anti-HBc (10%, $P < 0.001$). Hofer et al. [2] reported a high prevalence of the anti-HBc alone pattern in human immunodeficiency virus (HIV) co-infected subjects. They found that this pattern was present in 195 (43%) of their 450 HIV and hepatitis B virus (HBV) co-infected subjects. They detected HBV-DNA in 51 (89.5%) of 57 subjects tested, and as many as 33 of those (57.9%) were also positive for antibodies to HCV. The respective contribution of HCV and HIV co-infection on the prevalence of the anti-HBc alone pattern is still unknown.

We made a retrospective survey of all HBV and HCV markers simultaneously detected in our laboratory over a 50-month period from January 1, 1994 to February 9, 1998. Sera were taken from patients with elevated transaminases, hepatitis, liver cirrhosis or from asymptomatic subjects, mainly intravenous drug users (Table 1). Anti-HBc, anti-HBs, HBsAg and anti-HCV were tested using the Cobas Core enzyme immunoassay (Roche, Basel, Switzerland); their sensitivity and specificity of all was above 99.5%. As none of 104 subjects with isolated anti-HBc was shown to be HBV DNA-positive by polymerase chain reaction (PCR) [3], we decided not to assay DNA levels. Of 972 samples positive for anti-HBc, 199 (20%) were from 'anti-HBc alone' subjects. The 'anti-HBc alone' pattern was found more frequently in HCV co-infected (30%) subjects than in those negative for antibodies to HCV (17%). Consequently, the HCV prevalence was significantly higher in the 'anti-HBc alone' subjects than in those also positive for HBsAg or anti-HBs antibodies ($P \leq 0.0005$, Table 1). We also obtained similar results in 276 HIV-negative subjects, where the prevalence of anti-HCV was 44% in 73 'anti-HBc alone' subjects, as compared to 12.5% in eight with HBsAg and 33% in 195 with anti-HBs. In the 532 subjects also positive for anti-HBs, the level of anti-HBs antibody was lower in anti-HCV positives than in negatives; indeed, only 42% [56/134] of HCV-positive subjects had anti-HBs levels above 100 IU/L as compared to 61% [241/398] of HCV-negatives ($P < 0.001$).

We were thus able to confirm an association between the 'anti-HBc alone' status of HBV infection and HCV co-infection, and also in a population not infected by HIV. In carriers of both anti-HBc and anti-HBs, we found lower levels of anti-HBs in those co-infected with HCV than in non-infected subjects. These findings suggest that HCV infection might suppress antibody production or even viral replication, thus leading to the persistent anti-HBc-positive state but negative for anti-HBs and HBsAg.

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Table 1 HCV prevalence according to HBV markers and indication of HBV-HCV serology in anti-HBc alone subjects

HBV markers	Total ($n = 972$)	aHCV-positives ($n = 257$)	%
aHBs and aHBc-positive	532	134	25
HBsAg and aHBc-positive	241	46	19
aHBc alone	199	77	39[a]
Hepatic involvment[b]	44	10	23
No evidence of liver disease[c]	122	40	33
Intravenous drug users	33	27	82

[a] $P \leq 0.0005$ as compared to both other groups; [b] elevated liver enzymes, clinical hepatitis, liver cirrhosis, jaundice, hepatic graft; [c] except intravenous drug users.

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