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Researchers from Germany have found that **low levels of vitamin D are associated with high levels of hepatitis B virus (HBV) replication**. Findings published online in *Hepatology*, a journal of the American Association for the Study of Liver Diseases, suggest seasonal fluctuations in vitamin D and HBV levels point to a link in these variables among patients with chronic HBV.

While highly effective vaccines are available, HBV still remains one of the most significant infectious diseases worldwide. In fact, the World Health Organization (WHO) states that HBV is 50 to 100 times more infectious than human immunodeficiency virus (HIV). Furthermore WHO reports that two billion individuals have been infected with HBV, which is responsible for nearly 600,000 deaths each year. In the U.S. the Centers for Disease Control and Prevention (CDC) estimates that up to 1.4 million Americans are living with chronic HBV.

"Vitamin D helps maintain a healthy immune system and there is evidence of its role in inflammatory and metabolic liver disease, including infection with hepatitis C virus (HCV)," explains lead investigator Dr. Christian Lange from Johann Wolfgang Goethe University Hospital in Frankfurt. "However, the relationship between vitamin D metabolism and chronic HBV infection remains unknown and is the focus of our present study."

Between January 2009 and December 2010, the team recruited 203 patients with chronic HBV who had not previously received treatment for their infection. Levels of 25-hydroxyvitamin D were measured from each participant. Patients co-infected with

HCV, HIV, or hepatitis D; those with excessive alcohol use; and those with liver cancer or other malignancies were excluded.

Results show that 34% of participants had severe vitamin D deficiency (less than 10 ng/mL), 47% with vitamin D insufficiency (between 10-20 ng/mL) and 19% had normal levels of vitamin D (greater than 20 ng/mL). Further analyses indicate that the concentration of HBV in the blood, known as viral load, was a strong indicator of low vitamin D levels. In patients with HBV DNA less than 2000 IU/mL versus 2000 IU/mL or more, the levels of vitamin D were 17 and 11 ng/mL, respectively.

Researchers also determined that patients

with the hepatitis B antigen (HBeAg) had lower levels of vitamin D than HBeAg negative participants. Inverse seasonal fluctuations between vitamin D and HBV levels were noted, which further suggests a relationship between the two variables.

“Our data confirm an association between low levels of vitamin D and high concentrations of HBV in the blood,” concludes Dr. Lange. “These findings differ from previous research of patients with chronic hepatitis C, which found no connection between vitamin D levels and concentration of HCV in the blood.” The authors propose further investigation of vitamin D as a therapeutic intervention for controlling HBV.