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## RESEARCH COMMUNICATION

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# Individuals with HGVRNA are at High Risk of B Cell Non - Hodgkin's Lymphoma Development

Viroj Wiwanitkit

### Abstract

Lymphoma is a common hematological malignancy. Hepatitis viruses, especially hepatitis B and hepatitis C, are known risk factors for development of non-Hodgkin lymphomas. However, there are a number of patients with hepatitis in whom no virus can be identified and it was therefore postulated that there may be other agents which may be causing hepatitis. Many new hepatitis viruses have indeed been identified and proposed to have possible roles in pathogenesis of many disorders. Hepatitis G virus (HGV) is an example of a newly detected hepatitis virus. Whether there is a correlation between infection and development of non-Hodgkin's lymphoma is of interest. Therefore an appraisal of the prevalence of HGV RNA among patients with B cell non-Hodgkin's lymphoma comparing with healthy control subjects was performed. According to the literature review, three reports covering 247 cases of non Hodgkin's lymphoma were recruited. The overall prevalence of HGV RNA positivity was found to be 7.2 % (18/247). Of the three reports, only two had complete data on the prevalence in both patients with B cell non - Hodgkin's lymphoma and healthy control subjects and were used for further metanalysis study, covering 178 cases and 355 healthy subjects. The overall antibody positive rate in the patients and healthy subjects were 8.4 % (15/178) and 0.8 % (3/355), respectively, with an odds ratio is 10.8. According to this study, it can be seen that individuals who are HGV RNA positive may be at very high risk of B cell non-Hodgkin's lymphoma development.

**Key Words:** non - Hodgkin's lymphoma - HGV

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### Introduction

Lymphoma is a common hematological malignancy. Fisher and Fisher have argued that several pathogens may be linked to the risk of lymphoma, including Epstein-Barr virus, human immunodeficiency virus, human T-cell lymphotropic virus-1, *Helicobacter pylori*, hepatitis C, and simian virus 40 (Fisher and Fisher, 2004). Indeed, hepatitis viruses, especially hepatitis B and hepatitis C, have been repeatedly mentioned as risk factors for development of non-Hodgkin lymphomas (Roboz, 1998; Takada, 1999; Chow, 1993).

Presently, there are a number of patients with hepatitis in whom no virus can be identified and it has therefore been postulated that there may be other agents which may be causing hepatitis (Sehgal and Sharma, 2002). Many new hepatitis viruses are being identified and proposed to have possible roles in the pathogenesis of many disorders. Hepatitis G virus (HGV) is an example of a newly detected hepatitis virus (Stapleton, 2003). Here, the author performed an appraisal of the prevalence of HGV RNA among patients

with B cell non-Hodgkin's lymphoma comparing with healthy control subjects. Risk analysis was performed with the hypothesis that HGV RNA positivity might be an important risk factor for B cell non - Hodgkin's lymphoma development.

### Materials and Methods

A literature review to find previous reports about prevalence of HGV RNA among patients with B cell non - Hodgkin's lymphoma was performed using the electronic search engine PubMed ([www.pubmed.com](http://www.pubmed.com)) to search the literature. The available reports were collected and extracted for data about the prevalence of HGV RNA. These primary data were used for further metanalysis. Reports that did not present the prevalence in both patients with B cell non - Hodgkin's lymphoma and healthy control subjects were excluded for further risk analysis. In the metanalysis study, the overall HGV RNA positive rates in the patients and healthy subjects, as well as odds ratios, were calculated. SPSS 11.0 for Windows was used for statistical analysis.

**Table 1. Reports on HGV RNA in Patients with B Cell Non-Hodgkin's Lymphoma and Healthy Subjects**

Reports	Patients with lymphoma		Healthy subjects	
	Total (N)	HGV RNA positive (N, %)	Total (N)	HGV RNA positive (N, %)
Kaya et al, 2002 [7]	70	5, 7.1 %	70	1, 1.4 %
Giannoulis et al, 2004 [8]	108	10, 9.3 %	285	2, 0.7 %
Ellenrieder et al, 1998 [9]	69	3, 4.3 %	N/A	N/A

\* N/A = data not available

## Results

According to the literature review, three reports (Kaya et al., 2002; Giannoulis et al., 2004; Ellenrieder et al., 1998) covering 247 cases of non Hodgkin's lymphoma were recruited (Table 1). The overall prevalence of HGV RNA positive was 7.2 % (18/247). Of the three reports, only two had complete data on the prevalence in both patients with B cell non - Hodgkin's lymphoma and healthy control subjects and were used for further metanalysis study. According to the metanalysis, 178 cases and 355 healthy subjects were investigated for HGV RNA. The overall antibody positive rates in the patients and healthy subjects were 8.4 % (15/178) and 0.8 % (3/355), respectively. The odds ratio was 10.8 (Table 2).

## Discussion

Hepatitis virus infections are an increasing problem, with millions people all over the world being infected. They are thus accepted as a significant public health problem with several life altering complications. HGV is a newly documented hepatitis virus (Sehgal and Sharma, 2002; Stapleton, 2003). Similar to many other hepatitis viruses, transfusion of viremic blood/blood product is the presumed route of viral infection.

Only a few data are available concerning the newly discovered HGV and extrahepatic manifestations such as haematological malignancies (Ellenrieder et al., 1998). But, HCV and HGV most probably belong to the same family of Flavivirus, so that a similar correlation to the development of lymphoma could be expected (Ellenrieder et al., 1998). Indeed, the present summary of previously reported data for the prevalence of HGV RNA among patients with B cell non-Hodgkin's lymphoma compared with healthy control subjects indicated that having positive serum HGV RNA is a high risk factor for lymphoma development.

**Table 2. Case-control Analysis for the Correlation Between HGV RNA and Lymphoma**

HGV RNA	Patients with lymphoma	Healthy subjects
Positive	15	3
Negative	163	352

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