

Relationship between Viral Load and Alanine Transaminase (ALT) in HCV Infected Patients

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ABSTRACT

Aims: To investigate the relationship between ALT and HCV Viral Load as detected by PCR. Because HCV infection is a common threat all over the world, this relationship would be very helpful in making clinical decision in treatment of this disease.

Study Subjects: HCV patients with positive RNA PCR analysis.

Study Design: Observational descriptive study.

Clinical Setting: Study was carried out at Govt. M. Nawaz Sharif Hospital, Yakki Gate, Lahore.

Methods: 100 patients were included in the study. Patients with known HCV disease and Positive HCV RNA PCR were included in the study. Patients with negative HCV RNA PCR were not included in this study. Data was entered and analyzed using SPSS 17.0. It was done from known HCV positive patients at FMH hospital, Lahore. The blood specimen was drawn using sterile technique. The specimen was centrifuged and fresh serum was obtained, which was then transferred to aliquots and stored at -20°C for batch run.

Results: Out of the 100 samples, the results of PCR with high viral load were not showing increase in ALT concentration in their blood and individuals of low viral load were not showing a decrease ALT concentration in their blood necessarily ($p < 0.05$).

Conclusion: This study showed that there is non significant relationship between viral load and Alanine Transaminase of HCV PCR positive patients in our clinical setting

Keywords: PCR, ALT, Viral load, HCV

INTRODUCTION

Hepatitis C is an infectious disease affecting primarily the liver, caused by the hepatitis C virus (HCV). The infection is often asymptomatic, but chronic infection can lead to scarring of the liver and ultimately to cirrhosis, which is generally apparent after many years. In some cases, those with cirrhosis will go on to develop liver failure, liver cancer or life-threatening esophageal and gastric varices¹.

Pei et al (2009)² conducted a study in China titled "Correlations of Serum Hepatitis C Virus RNA and Alanine Transaminase with liver histopathological changes in patients with Chronic Hepatitis C". In this study, a total of 132 patients with HCV infection were enrolled before the antiviral treatment. All patients were positive 98 (74.2%) were positive for HCV-RNA (over 1.0×10^6 copies/L), and 99 (75.0%) were of a higher serum ALT level (ALT > 40 U/L). No significant correlation was noted between serum HCV-RNA titer and ALT level ($r=0.40$, $P=0.695$), but the higher ALT rate correlated with the HCV-RNA titer significantly ($r=1.00$, $P<0.01$). Young et al (2002)³ conducted a study and concluded that a

weak correlation existed between HCV genotyping, HCV RNA titer and serum ALT for antibody to HCV and had a history of raised serum ALTs for more than 6 months. Of 132 cases,

METHODOLOGY

The use of fluorescently labeled oligonucleotide probes or primers or fluorescent DNA binding dyes to detect and quantitate a PCR product allows quantitative PCR to be performed in real time. Serum ALT was performed on fully automated chemistry analyzer Beckman Coulter CX- 9 (USA) using Beckman coulter reagents.

RESULTS

The details of results are given in tables 1, 2 and 3

Table 1: HCV RNA Titer (n=100)

HCV Titer (IU/ml)	=n	%age
$1 - 10^4$	19	19.0
$10^4 - 10^5$	25	25.0
$10^5 - 10^6$	36	36.0
$10^6 - 10^7$	20	20.0

Table 2: Serum ALT Level (U/L) (n=100)

ALT	=n	%age
Normal	67	67.0
High	33	33.0

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Table 3: Correlation between HCV RNA Titer and ALT

	HCV titer U/ml	ALT IU/L
HCV titer IU/ml		
Pearson Correlation	1	.120
Sig. (2-tailed)		.235
N	100	100
ALT IU/L		
Pearson Correlation	.120	1
Sig. (2-tailed)	.235	
n	100	100

DISCUSSION

Pei et al (2009)² concluded that no significant correlation was noted between serum HCV-RNA titer and ALT level ($r=0.40$, $P=0.695$), but the higher ALT rate correlated with the HCV-RNA titer significantly ($r=1.00$, $P<0.01$). In the current study, however, there was no significant correlation between the two parameters even in case of higher levels of serum ALT levels. Same results were concluded from the

study of Oketani et al (1999)⁴, whose results were quite similar to the present study. The research of Young (2002)³ was also of a conclusion that HCV RNA has weaker correlation with serum ALT.

REFERENCES

1. Okamoto H, Lobata S, Tokita H, Inore T, Woodfield GD, Holland PV, et al. A second-generation method of genotyping hepatitis C virus by the polymerase chain reaction with sense and antisense primers deduced from the core gene. *J Virol Meth* 1996;57: 31-45.
2. Pei L, Ying L, Cui-ming S. Correlation of serum Hepatitis C Virus RNA and Alanine Transaminase with Liver histopathological changes in patients with Chronic Hepatitis C 2009;40:3-9
3. Youngs et al. Therapy of hepatitis C and their effects on liver structure 2002; 39:44-83.
4. Oketani M, Higashi T, Yamasaki N, Shinmyozu K, Osame M, Arima T. Complete response to twice-a-day interferon-beta with standard interferon-alpha therapy in acute hepatitis C after a needle-stick. *J Clin Gastroenterol* 1999;28:49-51.2.