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ASSOCIATION BETWEEN VIREMIA AND ALANINE TRANSAMINASE (ALT) IN HCV INFECTED PATIENTS

Dr. Masooma Ayesh[1], Dr Kainat Nazir[2], Dr. Syed Hammad Ali[1]

[1] Rawalpindi Medical University (RMU)

[2] KMU Institute of Medical Sciences (KIMS)

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Abstract:

Objectives: *To investigate the relationship between ALT and HCV titer detected by PCR. Since HCV infection is a widespread threat worldwide, this relationship would be very helpful in making clinical decisions in the treatment of this disease.*

Place and duration: *In the Medicine department of Holy Family Hospital Rawalpindi for one-year duration from February 2019 to February 2020.*

Subjects: *HCV patients with positive RNA PCR analysis.*

Study design: *Observational descriptive study.*

Methods: *100 patients were included in the study. Patients with known HCV disease and HCV RNA positive PCR were included in the study. Patients with HCV RNA negative PCR were not included in this study. Data were entered and analyzed using SPSS 17.0. This was done from known patients with HCV positive at FMH Hospital in Lahore. The blood sample was taken by sterile technique. The sample was centrifuged and fresh serum was obtained, which was then transferred into aliquots and stored at -200 ° C until series.*

Results: *Of the 100 samples, PCR results with high viral load did not show an increase in blood ALT, and those with low viral load did not necessarily show a decrease in blood ALT ($p < 0.05$).*

Conclusion: *This study showed that there is an insignificant relationship between viral load and HCV alanine transaminase PCR.*

Keywords*: PCR, ALT, Viral load, HCV*

Corresponding author:

Dr. Masooma Ayesh,

Rawalpindi Medical University (RMU)

QR code

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INTRODUCTION:

Hepatitis C is an infectious disease that affects the liver caused by the hepatitis C virus (HCV). Infection is usually asymptomatic, but chronic infection can cause liver cirrhosis, which eventually becomes visible after many years[1-2]. In some cases, people with cirrhosis develop liver failure, liver cancer or life-threatening esophagus and gastric varices[3]. Pei et al. (2009) conducted a study entitled "Correlations between liver histopathological changes in patients with chronic hepatitis C and hepatitis C virus RNA in serum and alanine transaminases"[4-5]. The study involved 132 patients with HCV infection before antiviral treatment. All patients were positive 98 (74.2%) were positive for HCV-RNA (more than 1.0 × 106 copies / L) and had 99 (75.0%) higher serum ALT levels (ALT> 40U / l)[6-7]. There was no significant correlation between serum HCV RNA titer and ALT (r = 0.40, p = 0.695), but the highest ALT was V HCV-RNA titer (r = 1.00, p <0.01). Young et al. (2002) conducted the study and concluded that there is a weak correlation between HCV genotype, HCV RNA and ALT serum titers for anti-HCV antibodies, and serum ALT history longer than 6 months[8-9]. Hepatitis C virus (HCV) is an important cause of chronic liver disease, often progressing at risk of cirrhosis and hepatocellular carcinoma. Chronic hepatitis C is usually silent, mostly found only by routine serological or biochemical tests. Many attempts have been made to describe the natural history and progression of hepatitis C infection, but some aspects have been clarified. In individuals with chronic hepatitis C, viral load and high serum alanine aminotransferase (ALT) levels can be clinically significant. When parenchymal liver cells are damaged, aminotransferases leak from the liver into the bloodstream, leading to high levels of these enzymes in the bloodstream. The exact identification of normal serum ALT activity levels is crucial for detection and follow-up studies in hepatitis C infection, but Normal or minimally high serum ALT levels in half of untreated patients with chronic HCV infections. As a result, several studies have recently questioned whether the predetermined values are clinically correct to define the normal ALT range[8-11]. In this context, it was assumed that serum ALT normal limits should be revised accordingly.

In this study, we tried to investigate serum ALT levels according to the clinical, biochemical, sonographic and histological features of patients with hepatitis C[12-13]. We also tried to investigate the normal ALT level in healthy adults with a low risk of chronic liver disease. In addition to daily clinical practice, this information may be clinically useful for hepatitis C and chronic liver disease research studies.

METHOD:

This study was held in the Medicine department of Holy Family Hospital Rawalpindi for one-year duration from February 2019 to February 2020. 100 patients were included in the study. Patients with known HCV disease and HCV RNA positive PCR were included in the study. Patients with HCV RNA negative PCR were not included in this study. Data were entered and analyzed using SPSS 17.0. This was done from known patients with HCV positive at FMH Hospital in Lahore. The blood sample was taken by sterile technique. The sample was centrifuged and fresh serum was obtained, which was then transferred into aliquots and stored at -200 ° C until series.

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

RESULTS:

Details of the 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

Table 3: Correlation between HCV RNA Titer and ALT

	HCV titer Uml	ALT IU/L
HCV titer IUml		
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) stated that there was no significant correlation between serum HCV RNA titre and ALT ($r = 0.40$, $p = 0.695$), but at the highest ALT, RNA-HCV-AR titer ($r = 1.00$, $p < 0.01$). However, there was no significant correlation between these two parameters in this study, even with higher serum ALT levels. The same results result from the research of Oketani et al. (1999), whose results are quite similar to the current study. Young (2002) 3 study also showed that HCV RNA has a weaker correlation with serum ALT[15]. Serum ALT levels, which are a measure of the biochemical activity of hepatitis, increased significantly with the perinatal bridge / necrosis, and this relationship is stronger than other components of the HAI index. Our results are in line with previous studies, which showed a statistically significant linear relationship between the degree of ALT elevation and the degree of liver damage in relation to the HAI score. In our study, the viral load showed a significant and inverse correlation with significant ALT levels. This result is in line with the findings of Ito et al. By showing that the average viral load is significantly higher in patients with chronic HCV with persistent normal ALT levels. In this context, it is assumed that the immune response to HCV may play a role in reducing viral load. However, it should be noted that some authors report higher ALT levels in patients with high viral load. Another group suggested that there was no significant difference in viral load between patients with abnormal ALT levels and patients with normal ALT levels. Although the reasons for the conflicting data have not yet been clarified, inconsistencies in the literature may be due, at least in part, to possible interfering factors such as ethnicity or different sample sizes. The duration of HCV infection may be important for the development of liver cirrhosis, and patients with longer periods of infection may have higher ALT levels. Our study found a positive relationship between serum ALT activity and duration of HCV infection. However, some authors have not been able to demonstrate such a relationship. In any case, it should be noted that the onset of HCV infection may be difficult to detect in some patients, and the duration of the disease is uncertain.

CONCLUSION:

This study showed that there is an insignificant relationship between viral load and HCV alanine transaminase PCR.

REFERENCES:

1. Cai, Shaohang, Zhandong Li, Tao Yu, Muye Xia, and Jie Peng. "Serum hepatitis B core antibody levels predict HBeAg seroconversion in chronic hepatitis B patients with high viral load treated with nucleos (t) ide analogs." *Infection and Drug Resistance* 11 (2018): 469. Cai, Shaohang, Zhandong Li, Tao Yu, Muye Xia, and Jie Peng. "Serum hepatitis B core antibody levels predict HBeAg seroconversion in chronic hepatitis B patients with high viral load treated with nucleos (t) ide analogs." *Infection and Drug Resistance* 11 (2018): 469.
2. Kothapalli, Anita, and Muhammad A. Khattak. "Safety and efficacy of anti-PD-1 therapy for metastatic melanoma and non-small-cell lung cancer in patients with viral hepatitis: a case series." *Melanoma research* 28, no. 2 (2018): 155-158. Kothapalli, Anita, and Muhammad A. Khattak. "Safety and efficacy of anti-PD-1 therapy for metastatic melanoma and non-small-cell lung cancer in patients with viral

hepatitis: a case series." *Melanoma research* 28, no. 2 (2018): 155-158.
3. Xing, Yu-Feng, Da-Qiao Zhou, Jing-Song He, Chun-Shan Wei, Wei-Chao Zhong, Zhi-Yi Han, De-Ti Peng et al. "Clinical and histopathological features of chronic hepatitis B virus infected patients with high HBV-DNA viral load and normal alanine aminotransferase level: A multicentre-based study in China." *PloS one* 13, no. 9 (2018).
4. Beck, Kendall R., Nicole J. Kim, and Mandana Khalili. "Direct acting antivirals improve HCV treatment initiation and adherence among underserved African Americans." *Annals of hepatology* 17, no. 3 (2018): 413-418. Beck, Kendall R., Nicole J. Kim, and Mandana Khalili. "Direct acting antivirals improve HCV treatment initiation and adherence among underserved African Americans." *Annals of hepatology* 17, no. 3 (2018): 413-418.
5. Zhu, Shishu, Hongfei Zhang, Yi Dong, Limin Wang, Zhiqiang Xu, Weiwei Liu, Yu Gan et al. "Antiviral therapy in hepatitis B virus-infected children with immune-tolerant characteristics: a pilot open-label randomized study." *Journal of hepatology* 68, no. 6 (2018): 1123-1128.
6. Sridhar, S., J. F. W. Chan, D. Y. H. Yap, J. L. L. Teng, C. Huang, C. C. Y. Yip, I. F. N. Hung et al. "Genotype 4 hepatitis E virus is a cause of chronic hepatitis in renal transplant recipients in Hong Kong." *Journal of viral hepatitis* 25, no. 2 (2018): 209-213. Sridhar, S., J. F. W. Chan, D. Y. H. Yap, J. L. L. Teng, C. Huang, C. C. Y. Yip, I. F. N. Hung et al. "Genotype 4 hepatitis E virus is a cause of chronic hepatitis in renal transplant recipients in Hong Kong." *Journal of viral hepatitis* 25, no. 2 (2018): 209-213.
7. Wang, Ming, Qian Bian, Yunxia Zhu, Qiumei Pang, Lingzhi Chang, Ran Li, Benjamin C. Tiongson, Hua Zhang, and Calvin Q. Pan. "Real-world study of tenofovir disoproxil fumarate to prevent hepatitis B transmission in mothers with high viral load." *Alimentary pharmacology & therapeutics* 49, no. 2 (2019): 211-217.
8. Gauder, C., L. N. Mojsiejczuk, L. Tadey, L. Mammana, M. B. Bouzas, R. H. Campos, and D. M. Flichman. "Role of viral load in Hepatitis B virus evolution in persistently normal ALT chronically infected patients." *Infection, Genetics and Evolution* 67 (2019): 17-22.
9. Ahmad, Fahad, Kashaf Junaid, and Ata ul Mustafa. "Relationship of Liver Enzymes with Viral Load of Hepatitis C in HCV Infected Patients by Data Analytics." *Age* 5: 18. Ahmad, Fahad, Kashaf Junaid, and Ata ul Mustafa. "Relationship of Liver Enzymes with Viral Load of Hepatitis C in HCV Infected Patients by Data Analytics." *Age* 5: 18.
10. Wong, Yu Jun, Karen Jui Lin Choo, Jade Xiao Jue Soh, and Chee Kiat Tan. "Cytomegalovirus (CMV) hepatitis: an uncommon complication of CMV reactivation in drug reaction with eosinophilia and systemic symptoms." *Singapore medical journal* 59, no. 2 (2018): 112.
11. Barooah, Prajjalendra, Snigdha Saikia, Rituraj Bharadwaj, Preeti Sarmah, Mallika Bhattacharyya, Bhabadev Goswami, and Subhash Medhi. "Role of VDR, GC, and CYP2R1 polymorphisms in the development of hepatocellular carcinoma in hepatitis C virus-infected patients." *Genetic testing and molecular biomarkers* 23, no. 5 (2019): 325-331.
12. Khan, Imran, Kalim ullah Khan, Muhammad Zubair Khan, and Sheraz Jamal Khan. "CORRELATION OF SERUM ALANINE AMINO TRANSFERASE WITH VIRAL LOAD IN CHRONIC HEPATITIS C PATIENTS." *KJMS* 11, no. 3 (2018): 471. Khan, Imran, Kalim ullah Khan, Muhammad Zubair Khan, and Sheraz Jamal Khan. "CORRELATION OF SERUM ALANINE AMINO TRANSFERASE WITH VIRAL LOAD IN CHRONIC HEPATITIS C PATIENTS." *KJMS* 11, no. 3 (2018): 471.
13. Syed, Taseen, Dr Javid Fazili, Ijlal Akbar Ali, Daniel Zhao, Diane Hughes, and Sultan Mahmood. "Hepatocellular carcinoma occurrence and recurrence in hepatitis C-infected patients treated with direct-acting antivirals." *Cureus* 10, no. 6 (2018).
14. Shamsian, S. A. A., S. Basharkhah, F. Sabet, H. R. Jahantightigh, S. A. Ghezeldasht, A. Mosavat, E. Barati et al. "Assessment of HCV viral load, genotype, liver biomarkers and clinical symptoms: Developing a mathematical model for prediction of HCV load." (2019).
15. Łucejko, Mariusz, and Robert Flisiak. "Quantitative measurement of HCV core antigen for management of interferon-free therapy in HCV-infected patients." *Antivir Ther* 23 (2018): 149-156.