

Comparison of Serum Level of Alanine Amino Transferase at 12 weeks and 24 weeks after the Start of Interferon Therapy in Chronic Hepatitis C Patients

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ABSTRACT

Aim: To compare serum level of alanine aminotransferase in term of normalization at 12 weeks versus 24 weeks after start of interferon therapy in chronic hepatitis C Patients.

Settings: This Quasi-experimental study was conducted at the department of pathology, Quaid-e-Azam Medical College/Bahawal Victoria Hospital, Bahawalpur from January 2013 to June 2013.

A total of 223 patients were enrolled to compare serum level of alanine aminotransferase in term of normalization at 12 weeks versus 24 weeks after start of interferon therapy in ch. hepatitis C Patients.

Results: In our study, majority of the patients were between 41-60 years i.e. 113(50.67%3), mean and sd was calculated as 44.65±4.21 years, 119(53.36%) male and 104(46.46%) were females, comparison of serum level of alanine aminotransferase in term of normalization at 12 weeks vs 24 weeks after start of interferon therapy in chronic hepatitis C Patients was done which shows 196(87.89%) in pts at 12 weeks of treatment while 213(95.52%) in patients at 24 weeks of treatment had normal alanine aminotransferase levels, it shows a sig. difference by calculated p value 0.03.

Conclusion: Normalization of alanine aminotransferase is found significantly higher at 24 weeks of therapy than 12 weeks.

Keywords: Hepatitis C, interferon therapy, serum level of alanine aminotransferase

INTRODUCTION

Chronic hepatitis C virus infects approximately 180 million people worldwide and is a frequent cause of liver disease, including live failure and hepatocellular carcinoma. Hepatitis C virus (HCV) is an RNA virus belonging to the family Flaviviridae, with an approximate diameter of 40-50 nm. HCV is a tremendous health problem not only in Pakistan but also throughout the world¹. About 200 million people are infected with HCV worldwide, which covers about 3.3% of the world's population. In Pakistan more than 10 million individuals are living with HCV with high morbidity and mortality².

There is wide variability in serum aminotransferase concentrations among individuals patients with chronic HCV infection over time. Up to one-third of patients have a normal serum ALT. About 25 percent have a serum ALT concentration more than twice normal, and it is rare to find elevations more than 10 times normal. There is generally a poor correlation between aminotransferase levels and liver histology³. It has also been suggested that serum ALT is an accurate marker of the response to interferon therapy. Interferon is widely used in treatment of HCV patients. According

to some authors, the serum levels of ALT before the start of therapy should be at least two times the upper limit of its normal value. ALT levels decreases with the effective treatment by interferon. We can measure ALT level to see the effectiveness of interferon therapy⁴.

Interferon is given subcutaneously at dose of 3 MIU three times a week for 24 weeks. Combination therapy with INF alpha and ribavirin has resulted in two to three folds improvement in virological response to the disease⁵. Response rates have been found to be favorable in 80-85% of chronic hepatitis C patients with genotype 2 and 3 as is predominant in Pakistan. In genotype 1 and 4 as is prevalent in America and Europe; response rates have been found to be 60-70% with INF and Ribavirin and may require 48 weeks treatment. Pegylated interferon has now replaced standard interferon alpha for chronic hepatitis C patients⁶.

A study conducted by Masood N et al⁷ showed that serum ALT became normal in 90.6% patients at 12 week and in 96.5% patients at 24 weeks.

Massive effort made worldwide in a search for adequate serum marker to monitor the effectiveness of interferon therapy that is cheap and easy to measure. The aim of this study is to evaluate the changes in serum ALT at 12 weeks and 24 weeks of interferon therapy in viral hepatitis C positive patients so that some practical recommendations could be

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made for early monitoring of treatment response and to make decision about subsequent treatment to prevent morbidity and mortality in these patients.

MATERIAL AND METHODS

This Quasi-experimental study was conducted at the department of pathology, Quaid-e-Azam Medical College/Bahawal Victoria Hospital, Bahawalpur from January 2013 to June 2013. The study was approved from hospital ethical committee. Informed written consent was taken from all patients. Total 223 patients fulfilling the inclusion criteria were included in the study. Patients having age 13-80 years and of both gender. All patients of chronic hepatitis “C” for more than 6 months (positive HCV RNA by PCR and elevated alanine aminotransferase) were included in this study. Patients with dual B and C viral hepatitis, Thyroid dysfunction before the start of therapy, Decompensated-cirrhosis, Hepatocellular carcinoma, previous treatment with IFN and/or ribavirin, autoimmune disease, pulmonary disease were excluded from the study.

These patients were recruited from medical OPD Bahawal Victoria Hospital, Bahawalpur who were under treatment for chronic hepatitis “C”. Base alanine aminotransferase was performed alongwith with HCV RNA by PCR from pathology department of Quaid-i-Azam Medical College/Bahawal Victoria Hospital Bahawalpur. Included patients were treated with Interferon alpha 2b(INF) three million units subcutaneously three times a week and ribavirin 800-1200 mg orally daily three times a day for six months. Patients were followed up after 12 weeks and 24 weeks of starting treatment. Alanine aminotransferase tests were repeated at 12 weeks and 24 weeks. The collected data was entered on the pre-designed proforma and statistical analysis of the data was done. Mean and standard deviation was calculated for numerical data and frequencies were calculated for categorical data. Normalization of ALT at 12 weeks versus 24 weeks was compared by chi square test. P value ≤0.05 was taken as significant.

RESULTS

A total of 223 patients fulfilling the inclusion/exclusion criteria were enrolled to compare serum level of alanine aminotransferase in term of normalization at 12 weeks versus 24 weeks after start of interferon therapy in chronic hepatitis C Patients. Table 1 shows comparison of serum level of alanine aminotransferase in term of normalization at 12 weeks versus 24 weeks after start of interferon therapy in chronic hepatitis C Patients was done which shows 96(87.89%) in patients at 12 weeks of

treatment while 213(95.52%) in patients at 24 weeks of treatment had normal alanine aminotransferase levels, it shows a significant difference by calculated p value 0.003. Table 2 shows 5(71.43%) out of 7 in 12 weeks and 6(85.71%) at 24 weeks out of 7 cases between 13-20 years, 53(82.81%) out at 12 weeks and 61(95.31%) out of 64 cases between 21-40 years, 105(92.92%) at 12 weeks and 109(96.46%) out of 113 cases between 41-60 years while 33(84.62%) at 12 weeks and 37(94.87%) at 24 weeks of treatment out of 39 cases between 61-80 years of age were recorded having normal level alanine aminotransferase. Table 3 shows 119(53.36%) were male and 104(46.46%) females. This table also shows that out of 119 male cases, 102(85.71%) at 12 weeks and 116(97.48%) at 24 weeks of treatment while out of 104 female cases 94(90.38%) at 12 weeks while 97(93.27%) at 24 weeks had normal level alanine aminotransferase (Table 3).

Table 1: Comparison of serum level of alanine aminotransferase in terms of normalization at 12 and 24 weeks (n=223)

Normalization	12 weeks	24 weeks
Yes	196(87.89%)	213(95.52%)
No	27(12.11%)	10(4.48%)

P value: 0.003

Table 2: Age distribution and stratification of the patients (n=223)

Age (years)	n%	Normalization	
		12 weeks	24 weeks
13-20	7(3.14%)	5(71.43%)	6(85.71%)
21-40	64(28.70%)	53(82.81%)	61(95.31%)
41-60	113(50.67%)	105(92.92%)	109(96.46%)
61-80	39(17.49%)	33(84.62%)	37(94.87%)

Mean and sd 44.65+4.21

Table 3: Stratification for gender of the patients (n=223)

Gender	n%	Normalization	
		12 weeks (n=196)	24 weeks (n=213)
Male	119(53.36%)	102(85.71%)	116(97.48%)
Female	104(46.64%)	94(90.38%)	97(93.27%)

DISCUSSION

Chronic hepatitis C virus (HCV) infection is a leading cause of chronic liver disease in Pakistan and world over^{8,9}. The frequency of new hepatitis C cases is growing and a number of patients are being identified with chronic liver disease and cirrhosis.

Combination therapy with INF- alpha and ribavirin has been recommended¹⁰ as the standard therapy for chronic hepatitis C and is given subcutaneously at doses of three million units three times a week for 24 weeks. The treatment response

to INF mono therapy for 6 months is considerably less than the combination with INF and Ribavirin and is reported to vary from 20-35%¹¹.

Massive effort made worldwide in a search for adequate serum marker to monitor the effectiveness of interferon therapy that is cheap and easy to measure. However, we planned to evaluate the changes in serum ALT at 12 weeks and 24 weeks of interferon therapy in viral hepatitis C positive patients so that some practical recommendations may be made for early monitoring of treatment response and to make decision about subsequent treatment to prevent morbidity and mortality in these patients.

In our study, on comparison of serum level of alanine aminotransferase in term of normalization at 12 weeks versus 24 weeks after start of interferon therapy in chronic hepatitis C Patients, 196(87.89%) in patients at 12 weeks of treatment while 213(95.52%) in patients at 24 weeks of treatment had normal alanine aminotransferase levels, it shows a significant difference by calculated p value 0.03.

These findings are in agreement with a study conducted by Masood N et al⁷ who showed that serum ALT became normal in 90.6% patients at 12 week and in 96.5% patients at 24 weeks.

Kenneth K Yaret al¹² showed 81% of end of treatment in Asians and SVR 73% in genotype I CHC patients. Amina Nadeem¹³ showed a response rate of 86% at the end of 24 weeks. Similarly Ashraf et al¹⁴ have reported 79% of response rate, while sustained virological response of 71.4% with combination therapy has been reported by Wazir et al¹⁵ and Sarwar et al¹⁶ discovered a response rate of 82% in their study. Farooqi et al¹⁷ detected a response rate of 87.3% in HCV patients likewise Abbas Z et al¹⁸ in his study showed a response rate of 90.6% and normalization of ALT in 97% of patients at the 24 weeks of therapy. Likewise Khokhar N¹⁹ in his study showed a response rate of 83% at 24 weeks of therapy.

The better response rate in our patients might be due to genotype 3, which is common in our country but definite evidence is not available being the limitation of the study. However, we recorded that treatment at 24 weeks is more responsive.

CONCLUSION

We concluded after comparison of serum level of alanine aminotransferase in term of normalization at 12 weeks versus 24 weeks after start of interferon therapy in chronic hepatitis C Patients, normalization of alanine aminotransferase is significantly higher at 24 weeks of therapy.

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