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Research Article

**A QUASI-EXPERIMENTAL RESEARCH TO COMPARE
NORMALIZATION IN SERUM ALT LEVELS AMONG HCV
PATIENTS MANAGED WITH INTERFERON THERAPY**¹Misbah Munir, ²Dr Yousaf Jamil, ³Dr. Naila Alam¹Sahiwal Medical College Sahiwal²Government General Hospital Samanabad Faisalabad³Rural Health Care Hospital Basir Pur**Abstract:**

Objective: The research objective is the comparison of levels of serum alanine aminotransferase at 12th vs. 24th week, with the reference of normalization, after interferon treatment has begun among the patients of chronic hepatitis C.

Patients and Methods: The study (Quasi-experimental) was conducted at the Medicine Department of Services Hospital, Lahore from June 2016 to April 2017. The subject size of 250 patients with chronic hepatitis C was selected to compare ALT serum in accordance with normalization at twelfth week vs. 24th week after ribavirin and interferon therapy has begun.

Results: The mean age of 250 subjects was (47.5 ± 06.7) years with the number of male and female patients as 54% (136) and 46% (114) respectively. Normal SAAL was recorded among 88% (220) patients at 12th week and 96% (240) patients at 24th week after the treatment of interferon started. Significant (p-value=0.001) difference was recorded at twelfth and 24th week, in terms of SAAL of normalization.

Conclusion: Normalization of SAAL was found distinctly higher at 24th week after the treatment has begun as compare to the 12th week.

Keywords: Hepatitis C Virus (HCV), Ribavirin & Interferon Therapy (R&IT), Serum Alanine Aminotransferase Levels (SAAL), Chronic Hepatitis C (CHC).

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INTRODUCTION:

CHC virus hits about 180 million victims worldwide. It is also one of the major causes of liver failure, hepatocellular carcinoma and other liver diseases. HCV belongs to Flaviviridae family, containing an RNA virus, having approximately 40 – 50 nm diameter. It is a huge enemy of health, in not only Pakistan but also worldwide [1]. Globally, 3.3% (200 million) of the population suffer from HCV. In Pakistan, ten million people become victims of this virus [2]. A variety of concentrations of serum aminotransferase occurs over time in a patient with CHC virus. One in three patients of CHC virus sustains a normal serum ALT. More than two times normal concentration serum ALT is found among 25% of patients but it is ten times normal concentration is rarely found. A poor relation is found between liver histology and SAAL generally [3]. According to a suggestion, interferon therapy is accurately responded, as a marker, by serum ALT. Patients of HCV are treated with interferon widely. The levels of serum ALT should be at upper limit twice than normal value as some authors suggest. Through interferon treatment, levels of serum ALT can be decreased. To see the effectiveness of interferon therapy, we can measure the levels of ALT [4]. The dose of interferon is given hypodermically for twenty-four weeks with 03 MIU, three times a week. The combination of ribavirin and IFN- α has shown great (two to three-fold) improvement in terms of virological response towards the disease [5]. CHC of genotype – II and III are predominant in Pakistan with a response rate of CHC patients as 80% – 85%. In America and Europe, the prevalence of genotype 4 and 1 is higher with a response rate of 60% – 70% through 48 weeks of interferon-Ribavirin combined treatment. CHC treatment with IFN- α has been replaced with peg-IFN [6]. Huge efforts are in progress globally to find out a cheap and effective serum maker to achieve monitoring of the levels of interferon therapy effectiveness. The objective of this study is to find out the levels of effectiveness of serum ALT among CHC patients at twelfth and 24th week with the treatment of interferon so that it allows us to make early monitoring recommendations for treatment response and to make better decisions for effective treatment for the prevention of mortality/morbidity among CHC patients.

MATERIAL AND METHODS:

The study (Quasi-experimental) was conducted at the Medicine Department of Services Hospital, Lahore from June 2016 to April 2017. With approval from the Intuitional Review Committee, each patient was taken with written informed consent. Subject size of 250 CHC patients with more than six months

duration of disease (Alanine aminotransferase and +ve HCV RNA by PCT) was selected. Both genders of patients having 13 – 80 years age range were taken for study. Criteria of exclusion were set as; patients with pre-treatment thyroid dysfunction, viral hepatitis of dual B & C, pulmonary/autoimmune disease, history of ribavirin and/or IFN- α treatment, decompensated cirrhosis, and hepatocellular carcinoma. By PCR, HCV RNA was performed with the base level of ALT. During treatment, patients were given with eight to twelve hundred milligram Ribavirin (orally) three times/day and IFN- α 2b (INF) three million units (subcutaneously) three times/week for six months. Follow-up of patients was observed after twelve and twenty-four weeks since the treatment started. Test results of Alanine aminotransferase were taken at 12th and 24th weeks. Pre-designed proforma was used for data collection and statistical analysis. Categorical data were calculated as percentages and frequencies and numerical data (age) was calculated as a mean and standard deviation. The comparison of ALT normalization at 12th vs. 24th weeks was done by Chi-Square with significant p-value $\leq 5\%$.

RESULTS:

A sample size of 250 CHC patients with mean age of (47.5 \pm 06.7) years was taken for study. The comparison of SAAL at twelfth vs. 24th week, in terms of normalization, after interferon therapy has started was carried out among patients of CHC. The number of male and female patients was 54% (136) and 46% (114) respectively (Table – I). After the interferon therapy has started, normal SAAL was noted at 12th week among 88% (220) patients and among 96% (240) patients at 24th week with a statistically significant difference of p-value 0.001 (Table – II). Three age group of 15 to 30 years, 31 to 45 years, and 46 to 60 years were made. Among 3.2% (8) patients of 15 to 30 years age group, normal SAAL was recorded among 71.4% (6) patients at 12th week and among 87.50% (7) patients at the 24th week of interferon therapy initiation. Among 29.2% (73) patients of 31 to 45 years age group, normal SAAL was recorded among 80.8% (59) patients at 12th week and among 94.5% (69) patients at the 24th week of interferon therapy initiation. Among 67.6% (169) patients of 46 to 60 years age group, normal SAAL was recorded among 92.3% (156) patients at 12th week and among 97% (164) patients at the 24th week of interferon therapy initiation (Table – II). According to gender distribution, among 54.4% (136) male patients, normal SAAL at twelfth and the 24th week was recorded among 86.7% (118) and 98.5% (134) patients respectively. Out of 45.60% (114) female patients, normal SAAL at twelfth and the 24th

week was noted among 89.5% (102) and 92.9% (106) patients respectively after the initiation of interferon

therapy (Table – II).

Table – I: Distribution in terms of age and gender

Age and Gender		Number	Percentage
Age (Years)	15 – 30	8	3.2
	31 – 45	73	29.2
	46 – 60	169	67.6
	Total	250	100
Gender	Male	136	54.4
	Female	114	45.6
	Total	250	100

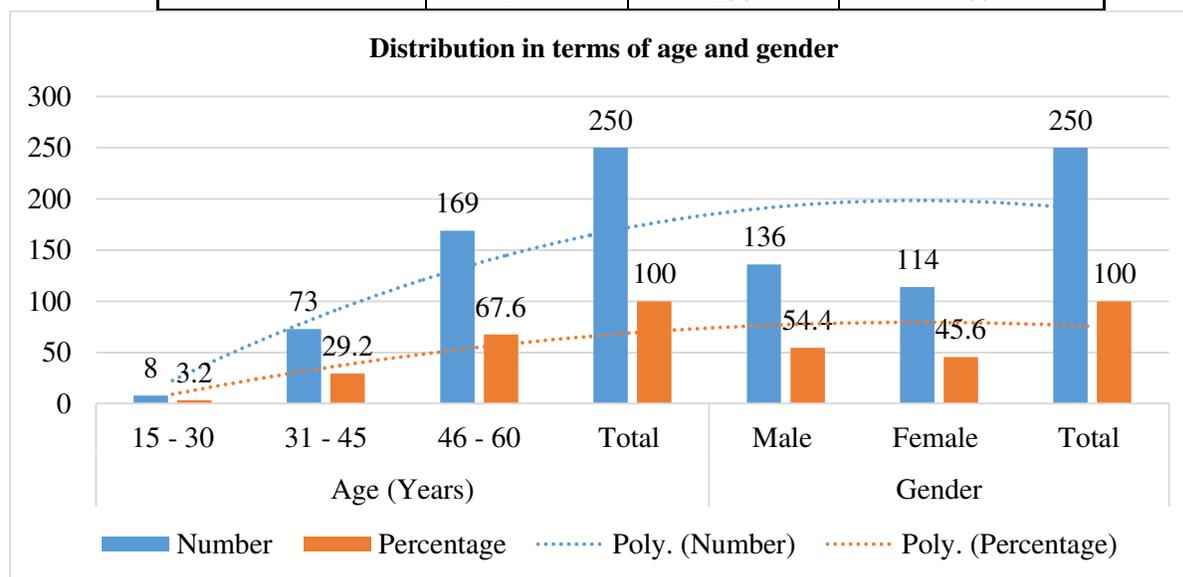
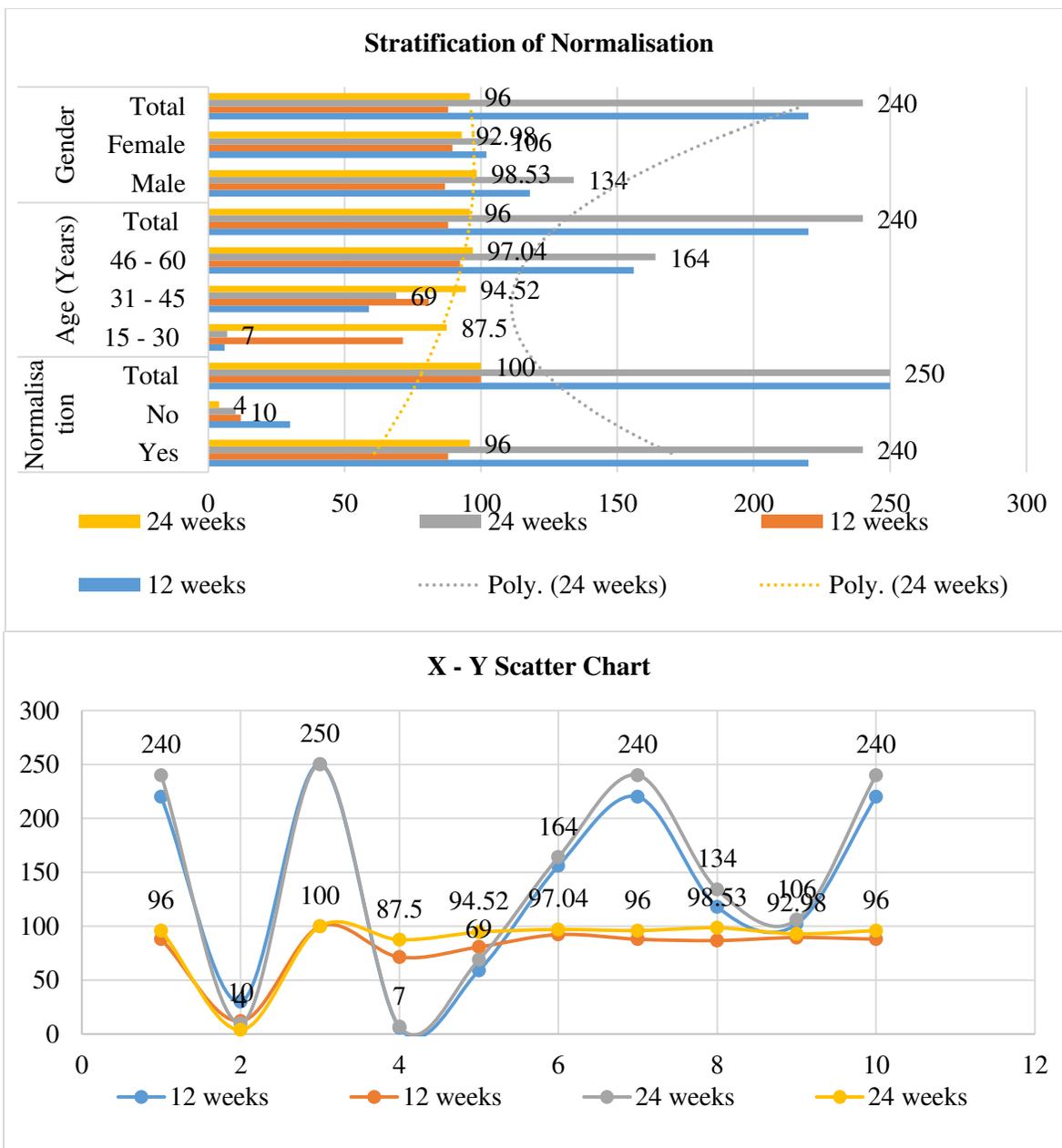


Table – II: Stratification of Normalisation

Normalization		12 weeks		24 weeks	
		Number	Percentage	Number	Percentage
Normalization	Yes	220	88	240	96
	No	30	12	10	4
	Total	250	100	250	100
Age (Years)	15 – 30	6	71.43	7	87.5
	31 – 45	59	80.82	69	94.52
	46 – 60	156	92.31	164	97.04
	Total	220	88	240	96
Gender	Male	118	86.76	134	98.53
	Female	102	89.57	106	92.98
	Total	220	88	240	96



DISCUSSION:

Hepatitis C virus is one of the major causes of chronic liver disease (CLD) worldwide. With the increase in the rate of hepatitis C, reports of liver cirrhosis and CLD are increasing [8, 9]. The combination of Ribavirin and interferon alpha is a recommended treatment for the infection of hepatitis C with a subcutaneous dose of three million units, three times/week for twenty-four weeks [10]. Therapy response of interferon only is 20% – 35% for six months compared to its combination with ribavirin [11]. One of the major efforts made worldwide is to find out a cheap and easy serum maker, which is adequate for the monitoring of IFN therapy effectiveness. However, the purpose of this

study was to find out the levels of effectiveness of serum ALT among CHC patients at twelfth and 24th week with the treatment of interferon so that it allows us to make early monitoring recommendations for treatment response and to make better decisions for effective treatment for the prevention of mortality/morbidity among CHC patients. In this current study, the comparison of SAAL at 12th vs. 24th week, in terms of normalization, after interferon therapy has started was carried out among patients of CHC. After the ribavirin and interferon therapy has started, normal SAAL was noted at 12th week among 88% (220) patients and among 96% (240) patients at 24th week with a statistically significant difference of p-value 0.001. Masood *et al.* in his study found

similar findings with normal SAAL among 90.60% and 96.50% patients at twelfth and 24th week respectively [7]. In another study, Nadeem et al found 86.0% treatment response at 24th week [13]. These findings have great similarity with our study. Rate of treatment response was 79.0% in the study of Ashraf et al. and 71.40% of sustained virological response in the study of Wazir et al. where both studies followed ribavirin and interferon alpha combination treatment [14, 15]. Three more studies of Sarwar et al, Farooqi et al, and Abbas et al found a treatment response rate as 82.0%, 87.30%, and 90.0% respectively [16 – 18]. Khokhar et al. found a rate of treatment response among 83% of the patient at 24th week with interferon therapy [19]. Genotype – III is thought to be the reason of better rate of treatment response among our patients, as it is common in Pakistan but due to the limitations of the study, definite reasons could not be achieved. However, treatment at twenty-fourth week is recorded as more responsive.

CONCLUSION:

The study concludes that the levels of serum ALT at 24th week has a higher rate of treatment response comparing to 12th week after interferon treatment has started, in terms of normalization, among patients of CHC.

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