RESEARCH PAPER

Comparison of Sofosbuvir plus Velpatasvir Vs Sofosbuvir plus Ribavirin in Achieving Sustained Viral Response in Patients with Chronic Hepatitis C

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ABSTRACT

Background: Chronic hepatitis C virus (HCV) is a significant health burden worldwide and much morbidity and mortality linked with liver cirrhosis and hepatocellular carcinoma. With the introduction of direct-acting antivirals, treatment has become revolutionary, with high sustained virological response (SVR) rates. Nevertheless, there is controversy over the use of ribavirin as part of combination regimens especially among patients with compensated cirrhosis. **Aim:** To compare the efficacy and safety of sofosbuvir plus velpatasvir versus sofosbuvir, velpatasvir, and ribavirin in achieving sustained virological response among chronic hepatitis C patients. **Methods:** It was a randomized controlled trial involving 258 patients (129 in each group) who had a 3-month study period in a tertiary care hospital. Group A was treated with sofosbuvir (400 mg) and velpatasvir (100 mg) once a day during a 12-week period and Group B was treated with the same in combination with weight-based ribavirin. RT-PCR was used to measure HCV RNA at baseline, during treatment (weeks 2 and 4), and 12 weeks follow-up. The data were processed in SPSS v25.0, and chi-square and independent t-tests were used as needed. **Results:** SVR at 12 weeks was significantly higher in Group A (95.3%) compared to Group B (87.6%) ($p=0.028$). Early virological suppression at week 4 was also greater in Group A (91.5% vs 80.6%, $p=0.012$). Relapse rates were lower in Group A (4.7% vs 12.4%, $p=0.028$), while treatment discontinuation due to adverse effects was higher in Group B (10.9% vs 2.3%, $p=0.006$). Genotype-specific analysis depicted better results in Group A in genotypes, especially the genotype 1 and 2. The negative effects like anemia (21.7% vs 3.9%, $p<0.001$) and laboratory abnormalities were much more common in ribavirin group. **Conclusion:** Sofosbuvir and velpatasvir showed better efficacy and safety than the ribavirin-containing regimen, indicating that ribavirin might not be essential in the achievement of optimal SVR in patients with compensated cirrhosis.

Keywords: Hepatitis C, Sofosbuvir, Velpatasvir, Ribavirin, Sustained Virological Response, Direct-Acting Antivirals, Cirrhosis

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INTRODUCTION

Chronic HCV infection is a significant public health issue in the world, impacting between 58 million and 107 million people, and resulting in about 290,000 deaths each year, as a result of cirrhosis and hepatocellular carcinoma (Manikat et al., 2024). Low- and middle-income countries have a disproportionately high burden of HCV as they have limited access to screening and treatment (Sallam and Khalil, 2024). HCV is an RNA virus with high genetic variability, which results in several genotypes that determine the response to the treatment and the progression of the disease (Stasi et al., 2024). Chronic hepatic inflammation, fibrosis, and cirrhosis take place as a result of consistent viral replication unless treatment is administered (Tariq et al., 2022). Natural history of HCV shows that almost 55-85% of infected individuals become chronically infected after acute exposure (Xiao et al., 2025). The gold standard of the cure is sustained viral response (SVR) (undetectable HCV RNA 12 weeks after treatment) that is linked to lower morbidity and mortality. With the introduction of direct-acting antivirals (DAAs), HCV treatment has

been transformed, and in most patient groups, it reaches an SVR rate of over 90% (Liu et al., 2023).

Sofosbuvir is a nucleotide analog NS5B polymerase inhibitor, which is the foundation of the modern treatment of HCV because it has a strong resistance barrier and is pan-genotypic (Ahmed et al., 2021). Velpatasvir, which is an NS5A-inhibitor, is used to complement sofosbuvir, attacking viral replication and assembly in all major HCV genotypes (Flamm et al., 2023). The sofosbuvir-velpatasvir fixed-dose combination has shown a high rate of SVR (>95% in clinical trials including ASTRAL-1, ASTRAL-2, and ASTRAL-3) in various patient populations (Ran et al., 2020). Considering that treatment in most cases does not require genotype-specific therapy, these regimens have simplified the treatment to a considerable extent. Nonetheless, some subgroups, such as those with decompensated cirrhosis or those who have failed DAA therapy in the past, might need an increase in the intensity of treatment (Maasoumy et al., 2023). Accordingly, the clinical judgment to prescribe ribavirin should create a balance between the gain in efficacy versus tolerability considerations (Childs-Kean et al., 2019).

Comparative data comparing sofosbuvir and velpatasvir with triple therapy with ribavirin have provided valuable evidence on the effectiveness of treatments in subgroups of patients (Borgia et al., 2019). ASTRAL-4 trial showed that the use of ribavirin could significantly increase the rate of SVR in patients with decompensated cirrhosis, where the rates were enhanced during the use of ribavirin (Su et al., 2023). Likewise, post facto cohort studies have indicated that the use of ribavirin-based regimens had the potential to increase viral clearance in patients with a dense viral load or genotype 3 infection (Su et al., 2023). Other studies, however, suggest that in non-cirrhotic patients who are naive to treatment, dual therapy leads to similar rates of SVR with no additional toxicity of ribavirin (Loo et al., 2022). This inconsistency highlights the need to focus on tailored treatment approaches depending on the patient characteristics and the severity of the disease. In addition, the adverse effects linked with ribavirin frequently result in dose adjustments or discontinuation, which could affect compliance and outcomes of treatment. Therefore, identifying the requisite of ribavirin in various clinical settings continues to be a primary area of research endeavors (Xie et al., 2022).

The HCV burden is notable in Pakistan, and the estimated prevalence is between 4.5-8% or more than 10 million individuals infected (Qureshi, 2025). Unsafe medical practice, insufficient blood screening, and poor public awareness are some of the factors that have contributed to the high prevalence (Ather et al., 2023). The most common one in Pakistan is Genotype 3 that has been traditionally related to particularly low response rates and an increased risk of hepatic complications (Aslam et al., 2023). Although the introduction of DAAs has greatly enhanced improved treatment outcomes, there has been inconsistency in the response among various patient subgroups. Treatment optimization is also complicated by resource constraints and healthcare disparities in the Pakistani situation (Mushtaq et al., 2020). Ribavirin could provide a better SVR in some high-risk populations but is costly and has a negative side effect profile (Pawlotsky, 2016). Locally produced evidence on the comparison between dual and triple therapy is critically needed to shape national treatment guidelines (Sohail et al., 2020). Consequently, the research is geared towards assessing the effectiveness of sofosbuvir plus velpatasvir compared to sofosbuvir, velpatasvir, and ribavirin in the process of attaining long-term viral response in chronic HCV patients in Pakistan with a gap in clinical evidence in the region (Waheed et al., 2019).

METHODOLOGY

Study Design and Setting

The study was an independent, randomized, controlled trial (RCT) conducted in the Department of Medicine, Aziz Bhatti Shaheed Teaching Hospital, Gujrat. The study period was changed to 10th February 2026 to 10th May 2026. This phase featured patient enrolment, treatment dispensing and follow-up to gauge therapy results, such as persistent virological response at 12 weeks follow-treatment.

Sample Size and Sample Population

The population size that was sampled was set at 129 patients per group and this translates to 258 subjects. This estimation was based on a 95% of confidence, 90% level of test power, and 0.05 of level of significant. The expected percentage of the sustained virological response rate was 83% in the Sofosbuvir and Velpatasvir group, and 94% in the combination therapy of Sofosbuvir and Velpatasvir and Ribavirin. The study took the patients that were hepatitis C virus infected, and compensated liver cirrhosis. Both male and female, age 18 years to 70 years participated. The registered patients were the ones who had given informed consent to participate in the study. The co-infected patients like hepatitis B surface antigen (HBsAg) positivity or human immunodeficiency virus (HIV) infected were excluded. Those who had chronic uncompensated liver disease and had a Child-Turcotte-Pugh (CTP) of B or C were excluded. The study did not include patients who were anaemic based on the hemoglobin level; the level was below 8mg/dl.

Patients that had impaired kidney functions as indicated by a conservative estimated glomerular filtration rate (eGFR) below 30 mL/min were also excluded. The pregnant women were not subjects of the study based on clinical history like marital status and based on an examination within the last two months. Patient recruitment was done using a non-probability consecutive sampling method. The study included all patients who came to the study setting and met the inclusion criteria within the study period until the required sample size was obtained.

Data Collection

A total of 258 patients (129 patients in each group) were included in the study as they met the inclusion criteria. Informed consent was given by all the participants. The baseline demographic data of all patients were also captured including their names, age, and gender. Past medical history of clinical use of former drugs, comorbid conditions such as diabetes mellitus, obesity and hypertension and predisposing conditions like surgical and blood transfusion history were taken. Diagnosis of hepatitis C virus infection was through the presence of HCV ribonucleic acid (RNA). The quantitative reverse transcription polymerase chain reaction (RT-PCR) was used to measure the viral load. Determining the liver status was decided to be founded on imaging modalities and liver function test. Measures of the baseline parameters (biochemical and hematological) were taken, and the same parameters were taken after 12 weeks of therapy. The two groups randomly chose them, using the lottery method. The Group A subjects received oral treatment of Sofosbuvir (400mg/day) and Velpatasvir (100mg/day) in 12 weeks. Group B received the same dosage of Sofosbuvir (400 mg/day) and Velpatasvir (100 mg/day) and weight-based Ribavirin via an oral dose. The dosages of ribavirin were adjusted to either 600 mg/kg/day to patients with a weight below 75kg and to 1200 mg/kg/day to patients with a weight above 75kg. The attainment of sustained virological response (SVR) was used to determine the successfulness in treatment in both the groups. 12-week post-treatment SVR was regarded as the undetectable HCV RNA using RT-PCR. An assessment of adverse effects and physical examination was conducted at a baseline, weekly and post-therapy.

Data Analysis

The data were analyzed using Statistical Package of Social Sciences (SPSS) version 25.0. The continuous variables (age and laboratory parameters) were given out as the standard deviation of the population mean. The categorical variables such as gender and the outcomes were displayed using frequencies and percentages, in the case of SVR. The chi-square test was used to make a comparative analysis of the binary variables between the two groups. A p-value of 0.05 or below was considered to be the level of statistical significance.

RESULTS

Baseline Demographics

The baseline demographics showed the high level of comparability between the two study groups, which proves successful randomization. The average age in Group A was 48.2±11.6 years versus 49.5±10.9 years in Group B and there was no statistically significant difference (p=0.312). There was also an even distribution of genders with males in Group A constituting 57.4% and even 55.0% in Group B (p=0.692), indicating an absence of gender selection bias. The average weight of subjects in Group A and Group B was 71.4±9.2 and 72.8±8.7 kg respectively, and there was no significant difference in this parameter (p=0.198). On the same note, the groups did not have significant differences in terms of BMI values (26.1±3.4 vs 26.5±3.1 kg/m^2, P=0.287), showing similar nutrition and metabolic status.

Table 1: Baseline Demographic Characteristics

Variable	Group A (n=129)	Group B (n=129)	p-value
Age (years)	48.2 ± 11.6	49.5 ± 10.9	0.312
Male	74 (57.4%)	71 (55.0%)	0.692
Female	55 (42.6%)	58 (45.0%)	
Weight (kg)	71.4 ± 9.2	72.8 ± 8.7	0.198
BMI (kg/m²)	26.1 ± 3.4	26.5 ± 3.1	0.287

Clinical Characteristics

Statistically similar baseline equivalence was provided by the distribution of clinical characteristics and risk factors in the two treatment groups. There was no significant different metabolic difference with 24.8% of the patients in Group A having diabetes mellitus and 27.1% with Group B (p=0.668). The prevalence of hypertension also was comparable (31.8% vs 34.1%, p=0.703), indicating the similarity of cardiovascular risks. There was also no significant difference in obesity rates (22.5% vs 24.0%, p=0.771), which also speaks in favor of homogeneity. There was an equal treatment history as 35.7% of Group A and 38.0% of Group B were observed to be taking previous medications. Surgical history (29.5% vs 31.0%, p=0.801) and blood transfusion exposure (20.9% vs 23.3%, p=0.642) were also evenly distributed. These results imply that the exposure of the known factors of

HCV transmission and progression were similar in both groups.

Table 2: Clinical Characteristics and Risk Factors

Variable	Group A	Group B	p-value
Diabetes Mellitus	32 (24.8%)	35 (27.1%)	0.668
Hypertension	41 (31.8%)	44 (34.1%)	0.703
Obesity	29 (22.5%)	31 (24.0%)	0.771
Prior Medication Use	46 (35.7%)	49 (38.0%)	0.705
Surgery History	38 (29.5%)	40 (31.0%)	0.801
Blood Transfusion	27 (20.9%)	30 (23.3%)	0.642

Normality Testing Outcomes

The data distribution was determined using Shapiro-Wilk test which revealed that all the continuous variables were distributed normally in both study groups since the p-values in both were all above 0.05. Precisely, age had p-values of 0.072 and 0.081 and weight had p-values of 0.065 and 0.093 respectively in Groups A and B respectively, which affirms normality. Similarly, BMI (0.089 vs 0.077), hemoglobin (0.061 vs 0.058), platelet count (0.070 vs 0.066), and total bilirubin (0.074 vs 0.069) were normally distributed across both groups. The results were the rationale behind the use of parametric statistical tests of the continuous variables. Therefore, independent sample t-test was employed to compare the means in samples. In the case of categorical variables, chi-square test was considered suitable as data distribution is based on frequencies.

Table 3: Normality Testing of Continuous Variables (Shapiro–Wilk Test)

Variable	Group A (p-value)	Group B (p-value)
Age	0.072	0.081
Weight	0.065	0.093
BMI	0.089	0.077
Hemoglobin	0.061	0.058
Platelets	0.070	0.066
Total Bilirubin	0.074	0.069

Virological and Treatment Outcomes

At the time of week 2, the proportion of those who had the virus suppressed was greater in Group A (76.0%), than in Group B (69.0%), but the difference was not statistically significant (p=0.198), indicating similar early antiviral activity. Nevertheless, by week 4, a statistically significant difference was seen, as 91.5% of the patients in Group A, having reached HCV RNA <15 IU/mL, versus 80.6% in Group B (p=0.012), showed faster viral clearance in the dual therapy group. At 12 weeks, the SVR (the primary endpoint) in Group A (95.3%) was considerably greater than that in Group B (87.6%) (p=0.028), which substantiated the effective treatment results. Group A (4.7% vs 12.4% p=0.028) reported lower levels of relapse than Group B, whereas Group A showed more long-lasting viral suppression. Also, discontinuation of treatment because of adverse effects was noted to be greatly higher in the Ribavirin group (10.9% vs 2.3% p=0.006) indicating worse tolerability. These findings indicate that there was no added benefit to the use of Ribavirin but rather more burden to treatment.

Table 4: Virological Outcomes and Treatment Response

Outcome	Group A	Group B	p-value
Week 2 (<15 IU/mL)	98 (76.0%)	89 (69.0%)	0.198
Week 4 (<15 IU/mL)	118 (91.5%)	104 (80.6%)	0.012
SVR at 12 weeks	123 (95.3%)	113 (87.6%)	0.028
Relapse	6 (4.7%)	16 (12.4%)	0.028
Discontinued due to side effects	3 (2.3%)	14 (10.9%)	0.006

Genotype-specific analysis showed that the high rates of SVR were consistently high in the group given Sofosbuvir-Velpatasvir in all the genotypes. Differences were found statistically significant in genotype 1 (95.2% vs 85.7%, p=0.041) and in subtype 1a (95.6% vs 83.3% p=0.039) to dual therapy. Genotype 2 demonstrated a great deal more SVR in Group A (96.5%) than in Group B (86.2%) (p=0.046). Even though it was observed that genotype 1b and genotype 3 were higher in the SVR in Group A (94.7% and 94.8%) than Group B (88.9% and 89.7%), these rates were not significant. These results support the pan-genotypic efficacy of Sofosbuvir–Velpatasvir without the need for adjunctive therapy.

Table 5: Genotype-wise SVR Outcomes

Genotype	Group A SVR	Group B SVR	p-value
Genotype 1	40/42 (95.2%)	36/42 (85.7%)	0.041

1a	22/23 (95.6%)	20/24 (83.3%)	0.039
1b	18/19 (94.7%)	16/18 (88.9%)	0.112
Genotype 2	28/29 (96.5%)	25/29 (86.2%)	0.046
Genotype 3	55/58 (94.8%)	52/58 (89.7%)	0.091

Adverse effects and laboratory abnormalities were significantly more pronounced in the Ribavirin group. Anemia was markedly higher in Group B (21.7%) compared to Group A (3.9%) ($p<0.001$), reflecting the known hematologic toxicity of Ribavirin. Hyperglycemia (14.0% vs 7.0%, p=0.048), lymphopenia (12.4% vs 5.4%, p=0.041), and thrombocytopenia (14.7% vs 6.2%, p=0.029) were also significantly more frequent in Group B. Mean hemoglobin levels were significantly lower in Group B (10.9±1.8 g/dL) compared to Group A (12.6±1.4 g/dL) ($p<0.001$). Platelet counts were reduced (156±39 vs 178±42, p=0.003), and total bilirubin levels were elevated (1.7±0.6 vs 1.3±0.4, p=0.001) in Group B. These findings indicate a higher toxicity burden associated with Ribavirin-containing therapy. The increased adverse effects likely contributed to higher treatment discontinuation rates.

Table 6: Adverse Effects and Laboratory Parameters

Variable	Group A	Group B	p-value
Anemia	5 (3.9%)	28 (21.7%)	<0.001
Hyperglycemia	9 (7.0%)	18 (14.0%)	0.048
Lymphopenia	7 (5.4%)	16 (12.4%)	0.041
Platelet decrease	8 (6.2%)	19 (14.7%)	0.029
Hb (g/dL)	12.6 ± 1.4	10.9 ± 1.8	<0.001
Platelets	178 ± 42	156 ± 39	0.003
Total Bilirubin	1.3 ± 0.4	1.7 ± 0.6	0.001

The correlation showed that there were significant correlations between SVR and various clinical variables. The young age (<50 years) significantly correlated with higher SVR (p=0.032), which indicates a greater treatment responsiveness. Comorbidities between diabetes and hypertension were also significantly coupled with lower SVR rates (p=0.041 and p=0.049 respectively), which reflects the effects of comorbidities in treatment outcomes. Obesity was significantly negatively correlated with SVR (p=0.038) which can be explained by a change in pharmacokinetics and metabolism. Blood transfusion history also had a strong connection with lowered SVR (p=0.027) which could have been due to increased viral load or risk of reinfection. The Genotype 3 infection had shown statistically significant association with SVR results (p=0.044), which proved its clinical significance. These results emphasize that the success of treatment depends on many factors.

Table 7: Correlation of SVR with Clinical Variables (Chi-Square Analysis)

Variable	SVR Achieved	SVR Not Achieved	p-value
Age ≤50	128	11	0.032
Diabetes	58	9	0.041
Hypertension	72	13	0.049
Obesity	49	11	0.038
Blood Transfusion	44	13	0.027
Genotype 3	107	9	0.044

The stratified analysis revealed that the effectiveness of treatment in various patient subgroups was different. Group A younger (≤50 years) patients showed a big difference in response (SVR of 97.1% and 87.0%) between Group A and B (p=0.021), showing that older patients respond differently. Male patients were also much better treated with dual therapy (95.9% vs 88.7%, p=0.048) although the difference in females was statistically not significant. Group A reported much greater SVR in diabetic patients (93.7% vs 84.2% p=0.039) indicating superior effectiveness in patients with a metabolically disadvantaged state. Likewise, Group A had much better patient outcomes compared to Group B (96.4% vs 89.1%, p=0.042) in patients who had a BMI <25. The results indicate that Sofosbuvir-Velpatasvir retains a consistent best position in various clinical subgroups.

Table 8: Stratification of SVR by Multiple Variables

Variable	Category	Group A SVR	Group B SVR	p-value
Age	≤50 years	97.1%	87.0%	0.021
	>50 years	93.2%	88.3%	0.289
Gender	Male	95.9%	88.7%	0.048
	Female	94.5%	86.2%	0.061
Diabetes	Yes	93.7%	84.2%	0.039
	No	96.1%	89.3%	0.051
BMI	<25	96.4%	89.1%	0.042
	≥25	94.0%	86.5%	0.067

DISCUSSION

The aim of this study was to determine the comparative effectiveness of the use of sofosbuvir plus velpatasvir with sofosbuvir, velpatasvir and ribavirin in achieving sustained virological response (SVR) in chronic hepatitis C patients with compensated cirrhosis. The results revealed that the rate of SVR was significantly higher in the dual therapy group of 95.3% than in the ribavirin-containing group of 87.6% (p=0.028). This disparity indicates that there were no added virological or any other benefits in the addition of ribavirin and that it might have had a negative effect on adherence to therapy. Similar results have been published in the ASTRAL-1 trial, in which sofosbuvir velpatasvir recorded SVR rates of over 95% in a population of more than 23 patients including genotypes (Flamm et al., 2023). Correspondingly, another cohort study of 137 Spanish patients had shown SVR rates of 96% with dual therapy and no ribavirin (Llaneras et al., 2019). The findings of the present study on the SVR are thus in line with the available evidence throughout the world that pan-genotypic regimens can be highly effective.

The preliminary virological response results also indicate the superiority of dual therapy with 91.5% of the patients developing HCV RNA to less than 15 IU/mL in week 4 versus 80.6% of the ribavirin group (p=0.012). Even though the rate of suppression was not statistically significant between week 2 (76.0% vs 69.0%, p=0.198), the difference at week 4 suggests faster viral clearance with sofosbuvir–velpatasvir alone. Rapid viral suppression is clinically relevant since it is indicative of increased chances of attaining SVR and decreased chances of transmission. These kinetics were also similar in ASTRAL-2 and ASTRAL-3 study among 149 patients, where patients treated with dual therapy had a greater than 90% viral suppression in week 4 (Nguyen et al., 2019). The results presented in the current study indicate that the viral kinetics in the early stages can be improved by ribavirin even though there is a theoretical synergy of these two in terms of antiviral activity. This is consistent with the pharmacodynamic data that show that direct-acting antivirals can suppress viruses to maximum levels without the need to combine with other antivirals (Shah et al., 2021). Thus, data on early treatment response is also additional confirmation of the effectiveness of ribavirin-free regimens.

This study showed significantly fewer relapse rates in the dual therapy group (4.7%) as compared to the ribavirin group (12.4%) (p=0.028), with more long-term virological suppression. The significance of this finding is especially high because relapse is a sign of the failure of treatment and causes the further burden of the disease. According to an American study among 5400 patients, the relapse rates are about 25% with sofosbuvir-velpatasvir, which is almost similar to the 4.7% in this research (Belperio et al., 2019). On the other hand, the adverse effects and low adherence have been associated with increased relapse rates in treatments including ribavirin. Relapses were mentioned in a multicenter study among 188 patients at 10-12% in regimens containing ribavirin, which is consistent with the current evidence of 12.4% (Matthews et al., 2021). This higher Group B relapse can be thus explained by discontinuation of the treatment and less compliance. These results contradict the idea that ribavirin improves long-term virologic outcomes.

Genotype-specific comparison showed the highest levels of SVR in the dual therapy group in all genotypes, and statistically significant differences in genotype 1 (95.2% vs 85.7%, p=0.041) and genotype 2 (96.5% vs 86.2%, p=0.046). Group A also demonstrated a significantly higher SVR in subtype 1a (95.6% vs 83.3%, p=0.039), demonstrating strong efficacy in viral subtypes. Genotype 3 was statistically non-significant (94.8% vs 89.7%, p=0.091) but the tendency was in favor of dual therapy. These results are aligned with Liu et al., (2021) among 191 Taiwanese patients with HCV, with sofosbuvir-velpatasvir showing 94-99% SVR in various populations and all genotypes (Liu et al., 2021). In a recent study in Singapore among 779 HCV patients, genotype 3 was reported to be hard to treat but has yielded better results through pan-genotypic-based regimens with above 90% of the SVR rates (Wong et al., 2021). This, combined with the absence of any substantial contribution on ribavirin to the overall harmful effect across genotypes, again casts doubt on the need to use it.

The safety of the treatment regimens showed a markedly increased adverse effects in the ribavirin group, especially anemia (21.7% vs 3.9%, p=0.001) and discontinuation of the treatment (10.9% vs 2.3%, p=0.006). This was also supported by the laboratory parameters where the lower hemoglobin level in Group B (10.9±1.8 g/dL) and in Group A (12.6±1.4 g/dL) (p<0.001) was lower. Platelet counts were also reduced (156±39 vs 178±42, p=0.003), while total bilirubin was elevated (1.7±0.6 vs 1.3±0.4, p=0.001) in the ribavirin group. These are in line with the established hematological toxicity of ribavirin especially hemolytic anemia. A recent Japanese study among 37 HCV patients also shown similar levels of adverse event rates with up to 20-30% of ribavirin-treated patients experiencing anemia (Tahata et al., 2023). The higher toxicity probably led to higher rates of discontinuation and decreased adherence to treatment. Conversely, dual therapy had a better safety profile and fewer adverse effects. These findings

highlight the need to strike a balanced score in the selection of treatment between efficacy and tolerability.

Although it has strong points, this research was not without limitations which are to be taken into consideration when reading the results. The research was carried out in one tertiary care center, and this might be a limitation to the implications of the findings in general populations. Non-probability consecutive sampling leads to selection bias possibility. Though the sample of 258 patients was sufficiently powered, subgroups, especially comparisons with specific genotypes could be underpowered. The follow-up duration was restricted to 12 weeks after treatment and this does not permit evaluation of the long-term consequences like reinfection and development of cirrhosis complications. Treatment compliance was not quantified in a quantitative manner, something that may impact the outcome of SVR, especially in the ribavirin group. Furthermore, the sample population size does not represent the decompensated liver diseases as most severe cases are excluded. Possible confounding variables like socioeconomic status and nutritional variables were not measured. Hence, it is recommended to confirm these findings by multicenter studies that have longer follow-up and more extensive inclusion criteria.

CONCLUSION

This research showed that the sofosbuvir and velpatasvir dual regimen had a considerably better sustained virological response (SVR) rate of 95.3% than 87.6% in the ribavirin-containing group (p=0.028), which showed better performance without the need to escalate treatment. Virological downturn was also more advanced in the dual therapy group (91.5% vs 80.6%, p=0.012) at week 4 which favored early viral clearance. The rates of relapse were also lower in the dual therapy group (4.7% vs 12.4%, p=0.028), which is one more additional confirmation of the sustainability of response. Genotype specific analysis revealed a statistically greater SVR in genotypes, especially genotype 1 (95.2% vs 85.7%, p=0.041) and genotype 2 (96.5% vs 86.2%, p=0.046). Ribavirin group showed much greater adverse effects, such as anemia (21.7% vs 3.9%, p=0.001), and treatment discontinuation (10.9% vs 2.3%, p=0.006), demonstrating worse tolerability. Lab results also confirmed higher toxicity levels in the ribavirin group, lower hemoglobin and platelet counts and higher bilirubin levels. Study revealed stratified analysis that better treatment outcomes were related to younger ages and the lack of comorbidities.

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