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Sofosbuvir and Ribavirin to Treat Hepatitis C Virus Genotype 4 Infection in a 65-Year-Old Patient With Diabetes and Low Platelet: A Case Report

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Abstract

Introduction: Hepatitis C virus (HCV) is a major public health problem especially in the elderly. The classical interferon/ribavirin regimen was unfavorable for elderly patents due to intolerability and adverse effects. More studies are needed about the safety profile of new direct-acting antiviral (DAA) in the elderly.
Case Presentation: Here, a case of chronic HCV was described in a 65-year-old female with diabetes and low platelet count. The patient was treated successfully by a combination of sofosbuvir+ ribavirin without major side effects.
Conclusions: This report highlighted the importance and the safety of this regimen to treat HCV in the elderly.

Keywords: Hepatitis C Virus, Direct-Acting Antiviral, Iraq, Elderly

1. Introduction

Hepatitis C virus (HCV) infection is a major global health problem (1, 2). Chronic HCV infection might associate with the development of serious liver cirrhosis, hepatocellular carcinoma and liver failure (3, 4). HCV genotype is a crucial predictor to determine sustained virologic response (SVR) in patients with HCV; treatment of such patients shows greater efficacy in genotypes 2 and 3 than in genotype 1; while genotype 4 is the most problematic to treat, though SVR is achieved up to 70% in the Middle East populations (3-5). With the emergence of new direct-acting antiviral (DAA) agents, the mainstream treatment of HCV changed toward better tolerability and higher cure rate in comparison with those of the classical regimen that consisted of pegylated interferon with ribavirin. However, the efficacy and safety profiles of DAA therapy in the elderly are unclear (6). In a study conducted in Egypt using sofosbuvir and ribavirin for previously treated HCV genotype 4, only few patients were $\geq$ 65 years old. The sustained virologic response was achieved in 50% of the patients. The other characteristics (such as diabetes and platelet count) of the patients were not clear. There is a need for more studies about the safety of new medications in the elderly.

2. Case Presentation

Here is the report of a 65-year-old female referred to the hepatitis unit in Azadi hospital, Duhok, Iraq, with a history of chronic HCV. The patient had diabetes and hyperlipidemia and was treated by insulin Mixtard® (total of 60U qd) and atorvastatin (20 mg qd). The patient had previously received pegylated interferon with ribavirin but discontinued the treatment due to depression and fatigue. Blood tests showed elevated alanine aminotransferase (ALT) (124 U/L) and aspartate aminotransferase (AST) (81 U/L), low platelet count (83×10^9) and normal serum albumin (3.9 g/L) and international normalized ratio (INR) (1.1) (Table 1). Reverse transcription polymerase chain reaction (RT-PCR) to identify HCV showed viral load of 1347857 IU/mL of genotype 4, which is the most common genotype in Iraq (5). Liver biopsy has notorious reputation in the local community and therefore the patient refused to conduct it. This case was challenging because of the age of the patient, low platelet count, diabetes and the costs of the new medications. Based on the drug availability and treatment cost, it was decided to treat the patient by ribavirin and sofosbuvir. The options were discussed with the patient and she agreed to take the regimen and sign the written informed consent accordingly. Sofosbuvir 400 mg qd and ribavirin 1 g qd were given for 24 weeks and the patient was followed up every four weeks. Rapid virologic response was achieved, liver enzymes decreased and platelet count increased. Sustained virologic response was achieved since HCV RT-PCR was negative 12 weeks after stopping treatment; ALT, AST and platelet count also improved. The patient reported no side effects during the course of treatment.

Table 1. Patient Monitoring and Laboratory Values

Tests	Before Treatment	During Treatment						12 Weeks After Treatment
		4 Weeks	8 Weeks	12 Weeks	16 Weeks	20 Weeks	24 Weeks	
RT-PCR	1347857	Negative	Negative	Negative	Negative	Negative	Negative	Negative
ALT	124	47	34	38	29	35	37	36
AST	81	42	34	33	30	32	30	34
Albumin	3.9	4	4	4.1	3.9	4.1	4	3.9
INR	1.1	1.5	1.3	1.1	1.2	1.2	1.2	1
Hb%	15.2	12.6	12	12.3	12	11.6	11.5	14.7
Platelet ($\times 10^9$)	83	127	166	159	175	163	147	130
FBS	175	142	132	129	136	143	141	164

Abbreviations: ALT, alanine aminotransferase; AST, aspartate aminotransferase; FBS, fasting blood sugar; Hb, hemoglobin; INR, international normalized ratio; RT-PCR, reverse transcription polymerase chain reaction.

3. Discussion

The classical treatment of HCV included pegylated interferon and ribavirin. However, most international guidelines excluded patients over the age of 65 years (7). Some trials showed high rates of treatment discontinuation in the elderly due to severe adverse events. Comorbidities such as ischemic heart disease, diabetes mellitus and Parkinson disease are regarded as unfavorable factors for treatment response with pegylated interferon/ribavirin (8). In addition, the age is considered as a negative predicting factor to achieve SVR (7, 8). DAA represents a major advancement in the treatment of elderly patients with HCV infection. It was previously shown that the age specific distribution of subjects with HCV was more skewed towards older generations (6). Therefore, it is important to conduct more studies on this age group to study the safety profile of the drugs. Also, interaction between DAA and drugs used to treat chronic diseases such as diabetes and hypertension should be studied more. It was previously shown that with the combination of sofosbuvir/ribavirin, SVR was achieved in 96.7% of overall patients and 94.1% of the elderly patients. In the same study, higher incidence of adverse effects was observed in the elderly (7). Pruritus and anemia were the most common adverse events during treatment with such a regimen. Here was reported the case of a 65-year-old female with chronic HCV and diabetes. Initial investigations showed low platelet count. The patient under treatment had experienced a combination of interferon/ribavirin, but could not tolerate the regimen due to depression and fatigue. The treatment was started with sofosbuvir/ribavirin combination. During the course of treatment, no major adverse effects were observed and the patient tolerated the medication well. Additionally, there was no interaction between this regimen and other medications used by the patient. It was previously shown that HCV is more prevalent in the elderly with rapid progression to cirrhosis; therefore, randomized controlled trials are needed to study the efficacy and safety profile of such a relatively cheap regimen to treat HCV in such an age group.

References

1. Hussein NR. Prevalence of HBV, HCV and HIV and Anti-HBs antibodies positivity in healthcare workers in departments of surgery in Duhok City, Kurdistan Region, Iraq. *Int J Pure Appl Sci Technol.* 2015;**26**(2):70.
2. Averhoff FM, Glass N, Holtzman D. Global burden of hepatitis C: considerations for healthcare providers in the United States. *Clin Infect Dis.* 2012;**55 Suppl 1**:S10–5. doi: 10.1093/cid/cis361. [PubMed: 22715208].
3. Koshy A, Madda JP, Marcellin P, Martinot M. Treatment of hepatitis C virus genotype 4-related cirrhosis: ribavirin and interferon combination compared with interferon alone. *J Clin Gastroenterol.* 2002;**35**(1):82–5. [PubMed: 12080232].
4. Legrand-Abravanel F, Colson P, Leguillou-Guillemette H, Alric L, Ravaux I, Lunel-Fabiani F, et al. Influence of the HCV subtype on the virological response to pegylated interferon and ribavirin therapy. *J Med Virol.* 2009;**81**(12):2029–35. doi: 10.1002/jmv.21583. [PubMed: 19856464].
5. Hussein NR, Tunjel I, Basharat Z, Taha A, Irving W. The treatment of HCV in patients with haemoglobinopathy in Kurdistan Region, Iraq: a single centre experience. *Epidemiol Infect.* 2016;**144**(8):1634–40. doi: 10.1017/S0950268815003064. [PubMed: 27125573].
6. Vespasiani-Gentilucci U, Galati G, Gallo P, De Vincentis A, Riva E, Picardi A. Hepatitis C treatment in the elderly: New possibilities and controversies towards interferon-free regimens. *World J Gastroenterol.* 2015;**21**(24):7412–26. doi: 10.3748/wjg.v21.i24.7412. [PubMed: 26139987].
7. Omata M, Nishiguchi S, Ueno Y, Mochizuki H, Izumi N, Ikeda F, et al. Sofosbuvir plus ribavirin in Japanese patients with chronic genotype 2 HCV infection: an open-label, phase 3 trial. *J Viral Hepat.* 2014;**21**(11):762–8. doi: 10.1111/jvh.12312. [PubMed: 25196837].
8. Aronsohn A, Ancuta I, Caruntu F, Coppola C, Delic D, Digiacomo A, et al. Impact of age on viral kinetics of peginterferon alfa-2a/ribavirin in chronic hepatitis C: final analysis from the PROPHESYS cohort. *J Viral Hepat.* 2014;**21**(5):377–80. doi: 10.1111/jvh.12179. [PubMed: 24131506].