Successful treatment of Hepatitis C virus infection in a renal transplant patient with ribavirin and sofosbuvir: A case report

Nawfal R. Hussein, Zana Sidiq Mohammed Saleem

ABSTRACT

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Case Report: We described a 29-year-old female patient with hepatitis C virus genotype 4 infection who was treatment naïve. The patient was diagnosed with HCV and HBV years after renal transplant operation. Treatment with sofosbuvir and ribavirin allowed for rapid decrease of serum HCV RNA. The patient developed anemia in two different occasions during the treatment period and received blood transfusion. Sustained virologic response was achieved.

Conclusion: The use of directly acting antivirals may allow a safe way to treat patients with renal transplant and chronic HCV. Such a treatment may improve the outcome of renal transplant in those patients with chronic HCV.

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CASE REPORT

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Introduction: In transplant patients, chronic hepatitis C virus could not be treated with classical interferon containing regimen as it is associated with serious complications including graft rejection. Though directly acting antivirals (DAAs) are potent for the treatment of HCV, such drugs are not been approved for the treatment of HCV in organ transplant subjects. **Case Report:** We described a 29-year-old female patient with hepatitis C virus genotype 4 infection who was treatment naïve. The patient was diagnosed with HCV and HBV years after renal transplant operation. Treatment with sofosbuvir and ribavirin allowed for rapid decrease of serum HCV RNA. The patient developed anemia in two different occasions during the treatment period and received blood transfusion. Sustained virologic response was achieved. **Conclusion:** The use of directly acting antivirals may allow a safe way to treat patients with renal transplant and chronic HCV. Such a treatment may improve the outcome of renal transplant in those patients with chronic HCV.

Keywords: Iraq, Ribavirin, Renal transplant, Sofosbuvir

How to cite this article

Hussein NR, Saleem ZSM. Successful treatment of Hepatitis C virus infection in a renal transplant patient with ribavirin and sofosbuvir: A case report. Int J Case Rep Imag 2016;7(6):370–373.

Article ID: Z01201606CR10654NH

doi:10.5348/ijcri-201666-CR-10654

INTRODUCTION

Chronic hepatitis C virus (HCV) infection remains a public health problem and an important cause of liver cirrhosis and transplant [1]. In comparison to uninfected subjects, HCV infection in renal transplant is associated with deleterious consequences such as a higher mortality rate due to different reasons [2–4] and an increased risk of allograft rejection [4]. The treatment of HCV infection in renal transplant patient with the aim of eliminating the risk of complications is highly desirable, however, this has been difficult to achieve. The treatment of HCV with classical interferon-containing regimens was fraught with poor tolerability, concern for interferon-associated acute graft rejection and ultimately very low success in achieving sustained virologic response. Therefore, the use of interferon free regimen is mandatory in such a case [5]. Outstanding development has been made in the treatment of chronic HCV with the development of potent directly acting antivirals (DAAs) [6]. These drugs may represent a promising mean for the treatment of HCV in renal transplant patients. However, trials are needed to study the efficacy and safety profile of DAAs in this group.

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Received: 22 January 2016

Accepted: 30 January 2016

Published: 01 June 2016

Recently, it has been shown that re-infection of a first liver graft can be prevented by sofosbuvir (SOF) and ribavirin (RBV) in subjects with compensated cirrhosis [7]. Here, to the best of our knowledge, we report the first case of a successful treatment with SOF and RBV for a renal transplant patient with chronic HCV genotype 4.

CASE REPORT

A 29-year-old Kurd female with renal transplant since 2004 was discovered with HBV in 2007 and HCV in 2013. The patient had been stable with normal ALT and AST. Then, in 2015, ALT started to fluctuate with a maximum read of 55 U/l. Total bilirubin, albumin and INR were normal (Table 1). The patient was sent to HBV and HCV RTPCR and results showed that the HBV level was undetected while HCV load was 3289285 IU/ml. HCV genotyping showed that the patient was infected with HCV genotype 4. Patient refused to get a liver biopsy done.

Immunosuppressive treatment consisted of mycophenolate 750 mg bid and tacrolimus 2 mg bid and prednisone 5 mg qd. For HBV, the patient received lamivudine 100 mg qd.

The patient discussed the new options of treatment of HCV with a multidisciplinary team. The patient decided to take treatment and would signed consent for that. The multidisciplinary team discussed the options and the availability of treatment in Iraq. It was concluded (based on availability and cost) that SOF and RBV regimen was the best available option for the treatment in our locality. Sofosbuvir was started at a dose of 400 mg qd plus RBV 1g qd. After starting treatment, the patient was followed up every four weeks. The rapid virologic response was achieved after four weeks though the viral load was still detectable. After eight weeks of treatment, the hemoglobin declined to 8.2 g/dl and blood transfusion was decided plus decreasing the dose of RBV to 400 mg qd (Table 1). Therefore, two units of blood were given to the patient. Four weeks later, the dose of RBV was returned back to 1 g qd and hemoglobin was measured after four weeks. Hemoglobin declined again to 7.2 and another two units of blood were given. The dose of RBV was decreased again into 400 mg qd. Then, RBV was increased gradually by adding 200 mg fortnightly. Then, hemoglobin never decreased to below 10 g/dl. HBV RTPCR was performed at 12th, 24th weeks and 12 weeks after stopping treatment and was negative in all occasions. Sustained virologic respond was achieved as

Table 1: Patient monitoring and selected laboratory values

Test/action	Before treatment	During the treatment						12 weeks after treatment
		4 week	8 week	12 week	16 week	20 week	24 week	
ALT	36	27	13	10	12	12	13	22
AST	32	23	17	15	16	16	18	21
Albumin	4.2	3.82	4.2	4.1	4.1	4.3	4.1	4.2
TSB	0.9	0.9	0.7	1.3	1.2	1.1	0.8	0.9
INR	1.4	1.1	1.2	1.3	1.5	1.2	1.5	1.1
S. creatinine	1.3	1.2	1.25	1.38	1.3	1.18	1.3	1.1
HCV RTPCR	3289285	8571	Negative	Negative	Negative	Negative	Negative	Negative
Hemoglobin	11.3	10.5	8.5	10.1	7.2	10	10	12.2
Blood Transfusion	No	No	2 units	No	2 units	No	No	
HBV RTPCR	Negative			Negative			Negative	Negative
HBsAg	Positive			Positive			Positive	Positive
HbeAg	Negative			Negative			Negative	Negative

the viral load was not detected 12 weeks after stopping treatment (Table 1). Informed consent was taken from the patient for treating with new drugs not approved for treatment of HCV in transplant patients. Approval for treatment was taken from Hospital's ethics committee.

DISCUSSION

The treatment of HCV after organ transplant is challenging. Interferon which has been used classically for the treatment of HCV can cause serious issues in organ transplant subjects. Recently, in non-transplant HCV-infected subjects, promising data about the use of interferon free regimen are available. In one study, 34 HCV genotype 1 infected liver transplant patients were recruited. Those patients were treated for 24 weeks with ombitasvir, dasabuvir and ribavirin. Sustained virologic response was achieved in 97% of them with minimum side effects [8]. There is an argument about the best timing for HCV treatment in renal transplant candidates (pre-transplant versus post-transplant) [9]. Usually, patients who need renal transplant go through a period of renal failure and dialysis. Currently, DAAs are not approved for the use in patients with renal failure. However, the optimum dosing of DAAs in such a group of patients might be available in near future [10]. In one study recruiting renal transplant subjects with chronic HCV, different regimens containing DAAs were used. The sustained virologic response was achieved in all patients including three patients who were treated with sofosbuvir and ribavirin. However, these patients (who received SOF plus RBV) were infected with the easier to treat genotype 2 [11]. Our patient was diagnosed with HCV genotype 4 and HBV co-infection. The liver function test had been stable for a while. Then, during follow-up sessions, ALT levels fluctuated with a maximum read of 55 U/l. Genotype study showed that the patient was infected with more difficult to treat genotype 4 which is the most common in our locality [12]. To the best of our knowledge, this is the first case of HCV genotype 4 and HBV co-infection to be treated with interferon free regimen. The anemia could have been avoided by gradual introduction of RBV. The renal function was stable throughout the study and no serious drugs interaction was recorded. Sustained virologic response was achieved as the viral load was undetectable 12 weeks after treatment. More studies are needed to investigate the efficacy and safety profile of such a regimen and if approved, it would prevent HCV related complication in renal transplant subjects and may improve graft survival.

CONCLUSION

This report showed that ribavirin and sofosbuvir can be used successfully in the treatment of hepatitis C virus infection in renal transplant recipient. Apart from

anemia, this regimen seemed to be tolerable and without major interaction with immunosuppressant used and without serious negative impact upon the graft.

Acknowledgements

We would like to thank all doctors and staff of Duhok transplant center for their cooperation.

Author Contributions

Nawfal R. Hussein – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Zana Sidiq Mohammed Saleem – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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