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Original Article

The treatment outcome and impact on blood transfusion demand of Peg-interferon/ribavirin in thalassemic patients with chronic hepatitis C

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Background/Aims: Hepatitis C virus (HCV) prevails in patients with thalassemia. We aimed to investigate the efficacy, safety, and impact on red blood cells (RBC) transfusion demand of pegylated interferon (Peg-IFN)/ribavirin therapy in thalassemic patients with HCV.
Methods: This retrospective study included 18 thalassemic patients (16 with HCV-1b, one HCV-1b/2b, and one HCV-2b) and 54 consecutive sex- and genotype-matched controls. Patients with HCV-2, or HCV-1 or mixed HCV-1/2 with lower viral loads plus rapid virological response (RVR) received 24-week Peg-IFN/ribavirin; whereas HCV-1 or mixed HCV-1/2 with higher viral loads or without RVR received 48-week regimens.
Results: The rates of RVR, complete early virological response, and sustained virological response (SVR) in thalassemic patients were 72.2% (13/18), 94.1% (16/17), and 77.8% (14/18), which resembled those of controls (63.0%, 94.4%, and 81.5%, respectively). RVR was the only significant factor associated with SVR in thalassemic group, and was the strongest predictor for SVR among both groups (OR/95% CI = 14.7/2.20—98.6), followed by male gender and lower viral loads. More proportion of interleukin-28B-TT carriage were observed among thalassemic patients with SVR versus non-SVR (78.6% vs. 50.0%). Thalassemic patients experienced significantly less 80/80/80 adherence, more ribavirin reduction and serious adverse events than controls. Notably, there was a decreased post-treatment RBC transfusion demand versus baseline in thalassemic patients with SVR (5.21 vs. 5.64 units/month, $p = 0.05$), but not in those without SVR (6.33 vs. 6.56 units/month, $p = 0.54$).
Conclusion: Peg-IFN/ribavirin was effective and tolerable for thalassemic HCV patients. Successful antiviral therapy might have extra benefit of reducing the post-treatment transfusion demand.

Introduction

Chronic Hepatitis C (CHC) is a major global health problem, affecting approximately 130—170 million persons worldwide. Hepatitis C virus (HCV) infection frequently leads to a considerable burden of chronic liver disease and related life-threatening complications, such as liver cirrhosis, variceal bleeding, and hepatocellular carcinoma (HCC).[1] The prevalence of HCV associated HCC has been increasing in Taiwan.[2] The World Health Organization has set the goal of eliminating HCV by 2030,[3] which has made the eradication of HCV in difficult-to-treat patients, such as those with thalassemia, even more crucial. Thalassemia is the most common single gene disorder in the world. Patients with thalassemia major are at a high risk of HCV infection because they require frequent blood transfusions, even in countries with standardized blood screening.[4] HCV infection is a leading cause of liver-related morbidity and mortality in thalassemic patients.[5] Despite the advances of direct-acting antiviral (DAA) agents for HCV treatment, pegylated interferon (Peg-IFN) combined with ribavirin (RBV) is still the standard of care (SOC), which has favorable efficacy in most Asian countries because of the limited availability and affordability of the former in this region.[6,7] In Taiwan, an SOC regimen with 48 or 24 weeks of Peg-IFN/RBV yielded a sustained virological response (SVR) rate of 70—75% and 85—90% for HCV genotypes 1/4 (HCV-1/4) and HCV-2/3, respectively.[7] A shorter 24-week regimen for HCV-1 with lower baseline viral loads and rapid virological response (RVR, serum HCV RNA $<$ 50 IU/mL at week 4 of treatment), as well as an abbreviated 16-week regimen with a weight-based, standard dose of RBV for HCV-2/3, provided similar efficacy to a genotype-guided SOC therapy.[8,9]

Although accumulating evidence has focused on Peg-IFN/RBV therapy in HCV patients with thalassemia,[10] there remains a lack of literature in Asian-Pacific countries, especially in Taiwan. Furthermore, given the higher favorable interleukin-28B (IL28B) distribution and more interferon responders in Asian countries,[11] we hypothesized that Peg-IFN/RBV is effective in thalassemic patients, as observed among the general population. Nevertheless, combination therapy has always raised concerns about adverse events, particularly hemolytic anemia in thalassemic patients.[12] In the present study, we explored the treatment efficacy and safety of Peg-IFN/RBV in this special entity of HCV population by conducting a case—control study before the IFN-free DAA regimen was widely available in Taiwan. We also evaluated the effects of a successful antiviral therapy on the demands of blood transfusion for patients with thalassemia.