ESRD patients

Chen-Hua Liu
Clinical Assistant Professor, National Taiwan University College of Medicine

Hepatitis C virus (HCV) infection is common in patients with end-stage renal disease (ESRD) receiving maintenance dialysis. It is estimated that the annual incidence of new diagnosed acute HCV infection is about 0.4-6.2%. Following acute HCV infection, 65.4-91.8% of these patients will evolve to chronic HCV infection, resulting in an overall estimated of prevalence rate of chronic HCV infection to be 3.3-16.8% worldwide. Without receiving effective antiviral treatment, dialysis patients with chronic HCV infection have high risks of liver-related morbidity and mortality. In addition, these patients also have greater risks of graft failure following renal transplantation.

In the era of interferon (IFN)-based therapies, the overall SVR rates are 72-88% for dialysis patients with acute HCV infection who receive peginterferon monotherapy. However, the sustained virologic response (SVR) rates are only 30-40% for dialysis patients with chronic HCV infection who receive peginterferon monotherapy. Ribavirin has considered to be contraindicated to treat these patients because of the potential risks of severe haemolytic anemia. However, two randomized control trials comparing the safety and efficacy of peginterferon plus low-dose ribavirin combination therapy and peginterferon monotherapy showed that combination therapy had greater SVR rates than monotherapy in term of HCV-1 (64% vs. 34%) and HCV-2 (74% vs. 44%) infections. However, patients receiving combination therapy experienced more severe anemia than those receiving monotherapy, and high dose erythropoiesis stimulating agents (EPOs) and ribavirin dose adjustment are needed to keep the safety.

Since the discovery of direct-acting antiviral agents (DAAs), telaprevir (TVR), which is metabolized by the liver, can be used without dosage adjustment in patients with renal impairment. Triple combination therapy with TVR plus peginterferon and ribavirin has been shown to have greater SVR rate than dual combination therapy. In the era of IFN-free DAA combination therapies, the NS3A protease inhibitors, NS5Ainhibitors, and the NS5B non-nucleoside polymerase inhibitors are mainly metabolized by the liver and no dose adjustment are needed for dialysis patients. Combination therapy with grazoprevir/elbasvir or paritaprevir/ritonavir/ombitasvir/dasabuvir with/without ribavirin has shown excellent SVR rates and good safety profiles. Although sofosbuvir has shown excellent safety and efficacy in HCV-infected individuals with normal renal function or mild renal impairment. The pharmacokinetic studies revealed the safety concerns of the use of sofosbuvir in patients with an eGFR < 30 ml/min. More data are awaiting with regard to the safety and efficacy for sofosbuvir-based IFN-free regimens in these patients.