Annals of Clinical Pharmacology & Toxicology

ISSN: 2642-9233

Editorial

COVID-19 and Practice of Remdesvir

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Editorial

Viruses have full potential to cause danger to human life and once the virus infects a cell, it tries to take over its host completely. Every animate thing from plants, animals and small bacterium are infected from virus.

Though our immune system kicks into gear when it identifies a pestilence. Some viral infections outpace an immune system. Many such viruses outpace the immune system and one of them is Corona virus.

This virus was first identified in Wuhan city, Hubei Province, China, and is causing an outbreak throughout the globe and 50 countries have been affected by this virus.

The major symptoms observed in the patients include fever, cough, breathing difficulty, and Pneumonia as reported by Chinese Health Authorities and World Health Organization (WHO).

The viruses cause Respiratory illness like common cold, and severe diseases like SARS (Severe Acute Respiratory Syndrome).

Pneumonia, Kidney failure, and death are the serious cases seen in a patient infected with this virus.

Remdesvir is an antiviral nucleotide prodrug of Adenosine analog administered intravenously. The chemical composition of the drug is such that each 100 mg vial of Remdesvir has lyophilized powder of 3 mg of Sulfobutylether-beta-cyclodextrin (SBECD) and each 100 mg/20 ml vial has 6 g of Sulfobutylether-beta-cyclodextrin.

The inhibition of transcription process is the mechanism of action of Remdesvir. The drug binds to Viral RNA-dependent RNA polymerase and inhibits viral replication by terminating premature RNA transcription.

The activity of Remdesvir against SARS-CoV2 (Severe Acute Respiratory Syndrome Corona Virus) was demonstrated in a Rhesus Macaque model *via in-vitro* mechanism and the activity demonstrated lower virus levels in lung and less damage to the lungs when administered in the model as stated above.

Remdesvir, emergency use of the drug in COVID-19 as approved by the Food and Drug Administration (FDA) has specific monitoring and the monitoring is such that the drug should be administered only to hospitalized adult and pediatric patients (aged > or =12 years and weighing > or =40 kg). However, the Clinical Trials study suggested the safety and efficacy of the drug are seen when used in combination with Corticosteroids as Dexamethasone. However, this efficacy and safety of Combinational therapy have not been directly compared in a large Randomized trial but the theoretical reasons suggest Combinational Drug Therapy of Remdesvir in COVID-19 patients.

Before administering Remdesvir in patients, the Patient's Liver Function Test and Prothrombin time test should be performed and the tests should be repeated during the treatment as per Clinical Indication which states that Remdesvir should not be administered inpatient or should be discontinued if the Patient's ALT (Alanine transaminase) is 10 times greater than the upper limit of normal or if there is any signs or symptoms of liver inflammation, the drug should be discontinued.

Therefore, the drug Remdesvir with the chemical composition of SBECD, a vehicle, as stated above is eliminated *via*. Kidney and thus, Remdesvir has a special consideration while administering to a Renal Insufficient patient as it may lead to accumulation and thereby causing toxicity. Thus, a Patient with eGFR (Estimated Glomerular Filtration Rate) <50 ml/min is excluded from Remdesvir administration. Thus, Renal toxicity is one of the major Adverse effects of Remdesvir if administered to Renal Insufficient patients.

Apart from these renal insufficiencies, Remdesvir shows adverse effects of Sinus bradycardia in patients. As per the studies, Remdesvir was used in 2016 in the Ebola pandemic and during that Randomized Clinical trial of Remdesvir and other antivirals suggested Hypotension and Cardiac arrest, and the same effects of the drug were seen in COVID-19 administration. Eight patients developed Hypertension and six patients developed Atrial Fibrillation. A subsequent Randomized Clinical Trial of 233 patients cited 1 patient with Cardiac arrest and none noted in the placebo group and thus Adaptive Covid-19 treatment suggested 1.1% incidence of a systole in the Experimental Group compared with 1% incidence in Controlled Group as well as 4% incidence of serious Atrial Fibrillation in Experimental Group and 2% incidence in Controlled Group.

Therefore, after various researches and clinical studies, it was confirmed that "Sinus Bradycardia" is one of the adverse effects of Remdesvir, and the use of broad-spectrum antiviral medication "Remdesvir" is restricted as an emergency use for the treatment of the patient with severe COVID-19.

Citation: Kumari A. COVID-19 and Practice of Remdesvir. Ann Clin Pharmacol Toxicol. 2022;3(1):1024.

Publisher Name: Medtext Publications LLC

Manuscript compiled: Mar 25th, 2022

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