Remdesivir and Potential Interactions With Psychotropic Medications:
A COVID-19 Perspective

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The US Food and Drug Administration (FDA) has approved remdesivir for severe coronavirus disease 2019 (COVID-19) in children and adults.[1] Remdesivir is a prodrug of a nucleotide analog that inhibits viral RNA-dependant RNA polymerase.[2,3] Initially studied in vitro for Ebola, remdesivir has shown efficacy against severe acute respiratory syndrome coronavirus 2.[2,3] Remdesivir is metabolized into a triphosphate metabolite.[4] Not much is known about remdesivir's drug interactions with psychotropics. We searched PubMed, Embase, Scopus, SciELO, PsycINFO, and Web of Science and looked at multiple guidelines including Medscape and Liverpool. Given the limited information available, the objective of this commentary is to review the potential interactions of remdesivir with psychotropic medications and summarize the current evidence.

Potential Pharmacodynamic Interactions

Remdesivir has a low propensity for pharmacodynamic interactions given its mechanism of action.[1,5]

QTc prolongation. There are no published reports of prolonged QTc, torsades de pointes, or arrhythmias in any database, including the World Health Organization's VigiBase or FDA Adverse Event Reporting System.[1] There is 1 study[6] on favipiravir, which is a similar medication. The small study[6] of 56 patients did not lead to QTc prolongation. Other options for COVID-19 treatment include chloroquine/hydroxychloroquine and ritonavir/lopinavir, which have a propensity to prolong the QT interval.[1,5] Since the moderate-to-severe COVID-19 patients also likely have ≥1 medical conditions that can prolong the QT interval, the absence of QT prolongation with remdesivir is crucial when making treatment decisions.[1,5]

Potential Pharmacokinetic Interactions

There is limited information about the absorption, distribution, metabolism, and elimination of remdesivir.[1] In vitro, remdesivir is a substrate for cytochrome P450 (CYP) 2C8, 2D6, and 3A4, along with p-glycoprotein and organic anion transporting polypeptides 1B1 (OATP1B1). It is also an inhibitor of CYP3A4, OATP1B1, OATP1B3, bile salt export pump, multidrug resistance-associated protein MRP4, and sodium/taurocholate cotransporting polypeptide. These in vitro studies[7] have not been followed up by studies assessing its clinical importance.[1] The clinical application of these in vitro studies is unknown at this point.[1]

There were some initial concerns about remdesivir and possible CYP3A4–based interactions. However, since it is primarily metabolized by hydrolase and initial results suggest that it is sensitive to esterases, no clinically relevant interactions are expected.[1]

When coadministered with carbamazepine, there is a potential decrease in remdesivir concentration. This combination should not be coadministered.[5] A similar interaction is described when coadministered with phenobarbital, phenytoin, and primidone, and so they should not be coadministered with remdesivir.[5] Remdesivir, when coadministered with eslicarbazepine or oxcarbazepine, needs close monitoring or dose adjustment, as it has the potential to decrease the concentration of remdesivir.[5]

St John's wort can decrease remdesivir levels.[5] At this time, antidepressants, in general, are not known to interact with remdesivir.[5]

Antipsychotics like thioridazine can potentially decrease remdesivir levels and require close monitoring or dose adjustment.[5] At this time, other typical and atypical antipsychotics, in general, are not known to interact with remdesivir.[5]

In summary, since there is a paucity of clinical experience with remdesivir, we urge psychiatrists to check updated drug interactions when coadministering any psychotropic medications.

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Prim Care Companion CNS Disord 2020;22(3):20com02664

To cite: Mansuri Z, Shah B, Zafar MK, et al. Remdesivir and potential interactions with psychotropic medications: a COVID-19 perspective. *Prim Care Companion CNS Disord*. 2020;22(3):20com02664.

To share: https://doi.org/10.4088/PCC.20com02664

Received: May 9, 2020.
Published online: May 28, 2020.

Potential conflicts of interest: None.
Funding/support: None.

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