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Introduction

Coronavirus disease 2019 (COVID-19) has resulted in hundreds of thousands of deaths throughout the world\(^1\). The nucleoside analog remdesivir has shown preliminary efficacy in shortening the duration of moderate and severe COVID-19\(^2,3\). Data from a randomized controlled trial during the Ebola epidemic suggests safety of remdesivir in pregnancy\(^4\); however, pregnant women have largely been excluded from clinical trials for COVID-19 treatment options\(^5\). Here we briefly describe the treatment of three pregnant patients hospitalized at our institution with confirmed SARS-CoV-2 infection who met criteria for compassionate use protocol of remdesivir.

Cases

Case A

A 25-year-old woman pregnant at 34 weeks of gestation presented with fever, tachycardia and tachypnea. Chest x-ray (CXR) revealed patchy consolidations and nasopharyngeal (NP) swab was positive for SARS-CoV-2 by RT-PCR (Table 1). On hospital day (HD) 2, the patient was transferred to the Intensive Care Unit (ICU) for increasing oxygen requirement on nasal cannula. The patient received a total of three doses of remdesivir (Figure 1), after which additional doses were withheld due to development of transaminitis. She was ultimately diagnosed with intrahepatic cholestasis of pregnancy (IHCP) in the setting of markedly elevated bile acids. The patient was discharged on HD 8, and underwent an uncomplicated vaginal delivery after scheduled induction at 37 weeks 2 days for IHCP.

Case B
A 28-year-old pregnant woman at 25 weeks of gestation was transferred to our ICU for COVID-19 pneumonia and acute hypoxic respiratory failure requiring bilevel-positive airway pressure ventilation. Remdesivir was initiated on HD 2, and she received eight doses of remdesivir. By HD 9, the patient’s supplemental oxygen requirement resolved, and she was discharged home.

Case C

A 29-year-old woman, pregnant woman at 25 weeks of gestation presented with eight days of fever, headache, cough and shortness of breath. She was tachypneic and tachycardic on admission. Chest x-ray revealed hazy opacities, and NP swab positive for SARS-CoV-2. She developed hypoxia with SaO2 of 88% on ambient air and was placed on supplemental oxygen. Remdesivir was administered for two doses until clinical improvement, and she was discharged on HD 6.

Comment:

As the COVID-19 pandemic continues and pregnant women remain at risk for adverse medical and obstetric outcomes, having safe and effective therapies, such as remdesivir, is crucial for this population. In our experience, all patients who were receiving supplemental oxygen had resolution of this requirement after initiation of remdesivir. However, a causal relationship cannot be concluded.

Case A underscores that the potential side effect of hepatitis with remdesivir use, which has been reported 6-8% in the non-pregnant population, may overlap with pregnancy-related causes of transaminitis, including IHCP. Although this case series is limited in its ability to make broad conclusions, remdesivir was well tolerated in pregnant women and possibly effective. Other
than transaminitis, adverse effects of remdesivir were not seen\textsuperscript{3}. Corticosteroids were not administered in our patients for maternal or fetal indications. However, recent data demonstrates that dexamethasone may improve outcomes in patients with COVID-19 and thus should also be considered as potential treatment for pregnant patients\textsuperscript{7}.

In each case, the process to obtain remdesivir delayed treatment for our patients by 1-2 days. This case series highlights the importance of including pregnant women in investigational trials and provision of rapid access to this drug, as pregnant women face increased risk for adverse outcomes in this pandemic\textsuperscript{4}.

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Authors may either sign the same form or submit individually

I am an author on this submission, have adhered to all editorial policies for submission as described in the Information for Authors, attest to having met all authorship criteria, and all potential conflicts of interest / financial disclosures appears on the title page of the submission.

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**Figure 1: Remdesivir Dosing Protocol**

<table>
<thead>
<tr>
<th>Remdesivir Dosing Protocol</th>
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<tbody>
<tr>
<td>- Day 1: Loading dose of 200mg Intravenously (IV) as single dose</td>
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<tr>
<td>- Days 2-5*: 100mg IV daily</td>
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</table>

*May extend for patients who do not demonstrate clinical improvement