Original Article

Remdesivir Prescription in Pregnant Women Infected with COVID-19: A Report of Compassionate Use

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Abstract

Background: Coronavirus disease 2019 (COVID-19) is an infectious disease that the physiological changes in pregnancy can make pregnant patients more susceptible to more severe forms of this infection. Hence, the treatment of COVID-19 in pregnant women can be challenging. This study was designed to evaluate the safety and efficacy of Remdesivir in pregnant women with COVID-19.

Materials and Methods: This study was conducted on 150 pregnant women with moderate to severe COVID-19 infection. Remdesivir was prescribed and continued for 5 or 10 days according to the patient's condition. Maternal and pregnancy outcomes and also recovery rates were evaluated. Moreover, additional variables were examined: age, gestational age, symptoms, O2 saturation and laboratory tests at admission, the interval between symptom initiation and admission to hospital and Remdesivir prescription, hospitalization days, and ICU admission.

Results: The mean age was 32.37 years. Cough and dyspnea were the most prevalent symptoms (74% and 68.7%, respectively). At the time of admission, 79 (52.7%) women needed low-flow oxygen support, 67 (44.7%) needed high-flow oxygen support, and 4 (2.7%) were intubated. Fifty-four (36%) patients required ICU care. In patients who died (12 women), Remdesivir was prescribed later than those discharged (*P* value, 0.04). Patients with favorable pregnancy outcomes received Remdesivir earlier than those with unfavorable pregnancy outcomes (*P* value: 0.008). The recovery rate was 70% (89.9% in the low-flow oxygen, 50.7% in the NIPPV/high flow oxygen, and 0% in the intubated women).

Conclusion: The results suggest that the early prescription of Remdesivir in pregnant women with moderate COVID-19 can improve the outcomes.

Keywords: COVID-19, pregnancy, Remdesivir

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Introduction

The World Health Organization (WHO) declared severe acute respiratory syndrome coronavirus 2(SARS-CoV-2) a pandemic on March 11, 2019, and made efforts to prevent and treat this disease. Millions of human-transmitted coronaviruses have been discovered since the 1960s. The latest type of coronavirus, Acute Respiratory Syndrome 2 (SARS-CoV-2), spread in Wuhan, China, in December 2019, giving rise to various symptoms, including pneumonia, respiratory failure, and death.

Mortality and morbidity rates varied globally, but a critical point is the high severity of these complications in infected pregnant women.[1,2]

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Due to the relative suppression of immunity and other physiologic changes during pregnancy, these people are more vulnerable to the complications of viral infections. Thus, Coronavirus 2019 (COVID-19) has prompted health care systems worldwide to pay special attention to protecting this high-risk demographic group.

Remdesivir is the first drug approved by the US Food and Drug Administration for clinical use to manage patients with severe infections. Remdesivir is an adenosine nucleotide prodrug that is transformed into its active form (triphosphate nucleoside) after entering cells. Remdesivir triphosphate acts as an adenosine triphosphate analog. Competing for integration into the ribonucleic acid (RNA) chain by SARS-CoV-2 RNA-dependent RNA polymerase can lead to delayed chain termination during the viral RNA replication.[3]

Complications of Remdesivir include elevated liver enzymes (a sign of liver damage) and allergic reactions including changes in blood pressure and heart rate, low blood oxygen levels, fever, shortness of breath, wheezing, swelling (in the lip area, eyes, and under the skin), rash, nausea, chills, and sweating.[4-11] In studies, elevated liver enzymes are the most reported adverse events following Remdesivir treatment in pregnant patients.[12-15]

However, several studies have been conducted to evaluate the efficacy and safety of Remdesivir for treating SARS-CoV-2 infection in non-pregnant individuals. However, in a few studies carried out on pregnant women, no fetal complications or abnormalities have been reported.[13,14]

In this study, 150 pregnant patients with moderate to severe pulmonary involvement of SARS-CoV-2 infection were evaluated to investigate the safety of Remdesivir during pregnancy as well as its effect on oxygen-need reduction, pregnancy outcome, and the final maternal outcome.

Materials and Methods

This cross-sectional study was conducted on 150 pregnant women who were referred to our hospital. With moderate to severe COVID-19 infection, who Remdesivir treated. This cross-sectional study was conducted on 150 pregnant women who were referred to our hospital with moderate to severe COVID-19 infection who were treated with Remdesivir.

Inclusion criteria were all pregnant patients in each trimester of pregnancy admitted from April 1 to December 31, 2021, with positive reverse transcription polymerase chain reaction (RT-PCR) test and moderate to severe pulmonary involvement of COVID-19 infection that according to our guidelines (RR >24 and O2sat <=93%) were candidates for Remdesivir prescription and exclusion criteria included patients with a creatinine clearance below 30 ml per min, liver function tests five times greater than the upper limit of normal status, and evidence of multi-organ failure. The Remdesivir was administered with a loading dose of 200 mg intravenously on day one and continued with 100 mg daily from days 2 to 4. In the absence of any improvement in symptoms, the treatment was continued for up to 10 days. The physician decided on the need for supportive therapies. The endpoint was defined as the hospital outcome (death/discharge) with no further follow-ups.

In this study, three clinical outcomes were considered:

1. Hospital outcome is defined as death or discharge.
2. Pregnancy outcome is defined as favorable/unfavorable at the time of discharge.
3. Term delivery and sustained pregnancy were defined as favorable pregnancy outcomes, while preterm delivery, stillbirth, and abortion were defined as unfavorable outcomes.

Recovery is also defined based on the type of the O2 support system. The baseline O2 support system upon admission was categorized into four categories: (1) room air; (2) low flow oxygen; (3) high flow oxygen or Non-invasive Positive Pressure Ventilation (NIPPV); and (4) Invasive Mechanical Ventilation (IMV). Recovery was also defined as any improvement in oxygenation and reduced oxygen demand after Remdesivir prescription relative to the admission. Changes in the oxygen support system were assessed using a modified ordinal scale as follows: (6) death, (5) hospitalized on IMV, (4) hospitalized on high-flow oxygen/NIPPV, (3) hospitalized on low-flow oxygen, (2) hospitalized on room air, and (1) discharge.[15]

Moreover, some other demographic and additional variables were also examined including: age (< vs. >=35 years), gestational age (<24, 24–32, >32 weeks), gravidity (1, 2, and more), history of comorbidity, the interval between symptom initiation and admission to hospital, the interval between symptom initiation and Remdesivir prescription, the length of hospitalization days, signs and symptoms (fever (Temperature>=38), dry persistent cough, dyspnea, myalgia, neurologic symptoms such as headache, gastrointestinal symptoms like nausea or vomiting), O_2 saturation at admission (below 93% vs. 93% and higher), ICU admission, and laboratory tests at the time of admission including white blood cells (WBCs) (<4 vs. 4–14 vs. >14 ($10^3/\mu L$)), neutrophil count (<12 vs. ≥12 ($10^3/\mu L$)), lymphocyte count (<0.8 vs. ≥0.8 ($10^3/\mu L$)), hemoglobin (<11 vs. ≥11 (g/dl)), platelet (<150 vs. ≥150 ($10^3/\mu L$)), C-reactive protein (CRP) (<5 vs. ≥5 (mg/L)), alanine aminotransferase (ALT) (<35 vs. ≥35 (U/L)), aspartate aminotransferase (AST) (<35 vs. ≥35 (U/L)), Lactic Acid Dehydrogenase (LDH) (<500 vs. ≥500 (U/L)), D-dimer (<1000 vs. ≥1000 (ng/ml)), ferritin (≤500 vs. >500 (μg/L)), and creatinine (≤0.8 vs. >0.8 (mg/dl)). Normal ranges were defined based on the laboratory reference range.

Statistical methods

Data were analyzed using SPSS 22 (SPSS Inc., IL, Chicago, USA). For the description of continuous variables, median and range were used. Categorical variables were also described using frequency. The proportion of patients who achieved clinical outcomes was reported. To compare continuous variables and categorical variables between the two groups,

the Mann–Whitney test and the Chi-square test were used, respectively. A significance level of 0.05 was considered.

Results

The participants were 150 pregnant women admitted to the hospital with a positive RT-PCR test for COVID-19. The sample's mean age (±SD) was 32.37 (5.23) years, of whom 64% were below 35 years old. Regarding gravidity, 39 (26%) were gravid 1, 49 (32.7%) were gravid 2, and others were gravid three or more. Most participants (44%) had a 24 to 32 weeks gestational age. Cough and dyspnea were the two most prevalent symptoms (74% and 68.7%, respectively), while only 10.7% of subjects presented nausea or vomiting. Forty-seven pregnant women (31.3) were admitted with an O2 saturation of 93% and higher. As regard to O2 support at the time of admission, 79 (52.7%) women needed low-flow oxygen support, 67 (44.7%) needed high-flow oxygen support, and 4 (2.7%) were intubated at the time of admission. Fifty-four (36%) patients who required ICU care were admitted to ICU. The level of liver enzymes was also monitored, and its elevation was detected. In our sample, 57 (38%) women demonstrated increased liver enzymes. More details are presented in Table 1.

Hospital outcome: A total of 12 (8%) women died. Demographic variables such as age, gravidity, comorbidity, gestational age at the time of admission, signs and symptoms, and laboratory results at the baseline (except for ALT, AST, and LDH) were not significantly different between the two groups (death and discharge). Abnormal AST (≥35) was reported in 42% and 83.3% of the patients discharged, and patients died, respectively. The percentage of those with abnormal AST in the latter group was higher than in the former group (83.3% vs. 44.9%, respectively, *P* value: 0.03). Abnormal LDH at the time of admission was reported in 83.3% of dead patients and 44.9% of discharged women (*P* value, 0.01). The time elapsed between the onset of symptoms and the Remdesivir prescription varied between the two groups. In patients who died, Remdesivir was prescribed later than those discharged (*P* value, 0.04). In all 12 women who died, unfavorable pregnancy outcomes were experienced: 3 had preterm labor, 7 had a stillbirth, and 2 had an abortion. Of those discharged, 19 women had preterm labor; one had a stillbirth, one had an abortion, and others reported favorable pregnancy outcomes. Details are outlined in Table 1.

Pregnancy Outcome: In the present study, favorable pregnancy outcomes were defined as term delivery or continuation at the study endpoint. Accordingly, 117 women (78%) experienced favorable pregnancy outcomes. The time elapsed between the onset of symptoms and Remdesivir prescription differed between the two groups, such that those with favorable pregnancy outcomes received Remdesivir earlier than those with unfavorable pregnancy outcomes (median (IQR): 5 days (4–7) vs. 6 days (5–7), respectively; *P* value: 0.008). It was the same for the time between the onset of symptoms and hospital admission, which differed between the two groups (*P* value, 0.02). Both groups presented similar symptoms except for dyspnea, which was higher in the groups with unfavorable pregnancy outcomes (*P* value = 0.03). ICU admission was also different between the two groups. About 66.7% of participants with unfavorable pregnancy outcomes had ICU admission instead of 27.4% in the group with favorable pregnancy outcomes (*P* value < 0.0001). Results of other variables related to pregnancy outcomes are presented in Table 2.

Recovery: The O2 support needed at the time of hospital admission was categorized into low-flow oxygen (n = 79), NIPPV/high flow oxygen (n = 67), and IMV (n = 4). The overall recovery rate was 70% (89.9% in the low-flow oxygen, 50.7% in the NIPPV/high flow oxygen, and 0% in the intubated women). In the low-flow oxygen, eight women did not exhibit any change in the need for oxygen support the day after receiving the last dose of Remdesivir. Also, 15 patients had one-level, and 56 had two-level improvements. Eight of those who needed NIPPV/high-flow oxygen at the time of hospital admission died, one was intubated, 24 showed no change, and the rest revealed some improvement. Women intubated at the time of admission did not exhibit any improvement and died [Table 3].

Discussion

This study, which was conducted on 150 pregnant women with moderate to severe COVID-19 infection to investigate the effectiveness of Remdesivir prescription on improving maternal and pregnancy outcomes, as well as the rate of the recovery process in these challenging and high-risk patients, showed that the initiation of Remdesivir in the early stages of moderate disease and before progression to the severe phase, with negligible side effects such as the nonserious increase in liver enzymes, can significantly improve both maternal and pregnancy outcomes and increase recovery rate.

Previous studies have demonstrated that pregnancy-related physiological changes make pregnant patients more susceptible to severe viral infection, which may even lead to maternal morbidity and mortality.[16,17] COVID-19 is also no exception to this rule. Furthermore, these research show that COVID-19 infection can increase unfavorable pregnancy outcomes, such as preterm birth, which is reported in up to 47% of pregnant women with COVID-19, which increases the risk of neonatal complications and healthcare costs.[18] So, finding an effective and safe therapeutic strategy for pregnant patient with COVID-19 is critical.

A multi-centric clinical trial conducted on 11,266 non-pregnant adult hospitalized patients needing supplementary oxygen by an average of 2 days.[4] Burwick RM *et al*.[15] pointed to the association between Remdesivir prescription and high recovery rate and the decreased average recovery time in pregnant women and postpartum women with severe COVID-19. Also, Yudianto admitted with a COVID-19 diagnosis reported that Remdesivir had no significant effect on reducing patient mortality, ventilation requirements, or length of hospital stay.[19]

Table 1: Demographic and clinical data of pregnant women in terms of hospital outcomes

	Total *n*=150	Hospital outcome		*P*
		Discharged *n*=138	Dead *n*=12	
Age				0.6
<35	96 (64%)	89 (64.5%)	7 (58.3%)	
≥35	54 (36%)	49 (35.5%)	5 (41.7%)	
Gravid				0.6
1	39 (26%)	37 (26.8%)	2 (16.7%)	
2	49 (32.7%)	44 (31.9%)	5 (41.7%)	
3 and more	62 (41.3%)	57 (41.3%)	5 (41.7%)	
Any past medical history	73 (49%)	68 (49.6%)	5 (41.7%)	0.7
Gestational age at the time of admission				0.2
<24	40 (26.7%)	35 (25.4%)	5 (41.7%)	
24-32	66 (44.0%)	60 (43.5%)	6 (50%)	
>32	44 (29.3%)	43 (31.2%)	1 (8.3%)	
Signs and symptoms at the time of admission				
Dyspnea	103 (68.7%)	92 (66.7%)	11 (91.7%)	0.1
Nausea/Vomiting	16 (10.7%)	15 (10.9%)	1 (8.3%)	1.0
Neurologic symptoms	25 (16.7%)	24 (17.4%)	1 (8.3%)	0.6
Cough	112 (74.7%)	101 (73.2%)	11 (91.7%)	0.2
Fever	83 (55.3%)	76 (55.1%)	7 (58.3%)	0.8
Myalgia	60 (40.0%)	55 (39.9%)	5 (41.7%)	0.9
O_2 saturation at the time of admission				0.01
Above 93%	47 (31.3%)	47 (34.1%)	0 (0%)	
Below 93%	103 (68.7%)	91 (65.9%)	12 (100%)	
O_2 support at the time of admission				0.000
Low-flow oxygen	79 (52.7%)	79 (57.2%)	0 (0%)	
High-flow oxygen/NIPPV	67 (44.7%)	59 (42.8%)	8 (66.7%)	
Intubate	4 (2.7%)	0 (0%)	4 (33.3%)	
Laboratory results at the time of admission				
Wbc				0.05
<4 (10^3/μL)	9 (6.0%)	8 (5.8%)	1 (8.3%)	
4-14 (10^3/μL)	135 (90.0%)	126 (91.3%)	9 (75%)	
>14 (10^3/μL)	6 (4.0%)	4 (2.9%)	2 (16.7%)	
Neut >12 (10^3/μL)	6 (4.0%)	4 (2.9%)	2 (16.7%)	0.07
Lymph <0.8 (10^3/μL)	41 (27.3%)	37 (26.8%)	4 (33.3%)	0.7
Hb <11	63 (42.0%)	57 (41.3%)	6 (50.0%)	0.5
Plt <150 (10^3/μL)	44 (29.3%)	41 (29.7%)	3 (25.0%)	0.7
CRP >5	150 (100%)	138 (100%)	12 (100%)	-
Alt >35	68 (45.3%)	58 (42.0%)	10 (83.3%)	0.01
Ast >35	81 (54.0%)	71 (51.4%)	10 (83.3%)	0.03
LDH >500	72 (48.0%)	62 (44.9%)	10 (83.3%)	0.01
D-dimer >1,000	90 (60.0%)	85 (61.6%)	5 (41.7%)	0.1
Fr >500	16 (10.7%)	14 (10.1%)	2 (16.7%)	0.6
Cr >0.8 (mg/dl)	9 (6.0%)	9 (6.5%)	0 (0%)	0.3
ICU admission				0.000
Yes	54 (36%)	42 (30.4%)	12 (100%)	
No	96 (64%)	96 (69.6%)	0 (0%)	
Days between symptom onset and hospital admission, Median (IQR)	5 (4-7)	5 (4-7)	6 (5-7)	0.4
Days between symptom onset and receiving Remdesivir, Median (IQR)	6 (4-7)	5.5 (4-7)	6 (6-7.7)	0.04
Hospital stay, days Median (IQR)	7 (6-9)	7 (6-9)	11.5 (6.2-16.2)	0.03
Pregnancy outcome at the time of discharge				0.000
Preterm delivery	22 (14.7%)	19 (13.8%)	3 (25.0%)	
Pregnant	109 (72.7%)	109 (79%)	0 (0%)	
Stillbirth	8 (5.3%)	1 (0.7%)	7 (58.3%)	

Contd...

Table 1: Contd...

	Total *n*=150	Hospital outcome		*P*
		Discharged *n*=138	Dead *n*=12	
Term delivery	8 (5.3%)	8 (5.8%)	0 (0%)	
Abortion	3 (2.0%)	1 (0.7)	2 (16.7%)	
Pregnancy outcome				0.000
Favorable	117 (78%)	117 (84.8%)	0 (0%)	
Unfavorable	33 (22%)	21 (15.2%)	12 (100%)	
Remdesivir complications (LFT rise)	57 (38%)	51 (37%)	6 (50%)	0.3

Data are presented as numbers (percent) unless otherwise stated. ALT: Alanine transaminase; AST: Aspartate transaminase; Cr: Creatinine; CRP: C-Reactive Protein; Fr: Ferritin; Hb: Hemoglobin; ICU: Intensive Care unit; IQR: Inter Quartile Range; LDH: Lactate dehydrogenase; LFT: Liver Function Test; Lymph: Lymphocyte; Neut: Neutrophil; Plat: Platelet; WBC: White Blood Cells

Table 2: Demographic and clinical characteristics in terms of pregnancy outcome

	Favorable *n*=117	Unfavorable *n*=33	*P*
Age			0.4
<35 years old	73 (62.4%)	23 (69.7%)	
>35 years old	44 (37.6%)	10 (30.3%)	
Gravid			0.4
1	28 (23.9%%)	11 (33.3%)	
2	38 (32.5%)	11 (33.3%)	
3 and more	51 (43.6%)	11 (33.3%)	
Gestational age at the time of admission			0.1
<24	34 (29.1%)	6 (18.2%)	
24-32	53 (45.3%)	13 (39.4%)	
>32	30 (25.6%)	14 (42.4%)	
Sign and symptoms			
Dyspnea	75 (64.1%)	28 (84.8%)	0.03
Nausea/Vomiting	14 (12%)	2 (6.1%)	0.5
Neurologic symptoms	22 (18.8%)	3 (9.1%)	0.2
Cough	86 (73.5%)	26 (78.8%)	0.5
Fever	63 (53.8%)	20 (60.6%)	0.4
Myalgia	49 (41.9%)	11 (33.3%)	0.3
O_2 saturation at the time of admission			0.06
≥93%	41 (35%)	6 (18.2%)	
<93%	76 (65%)	27 (81.8%)	
O_2 support at the time of admission			0.000
Low-flow oxygen	71 (60.7%)	8 (24.2%)	
High-flow oxygen/NIPPV	46 (39.3%)	21 (63.6%)	
Intubated	0 (0%)	4 (12.1%)	
Laboratory results at the time of admission			
WBC			
<4 (10^3/μL)	8 (6.8%)	1 (3.0%)	0.1
4-14 (10^3/μL)	106 (90.6%)	29 (87.9%)	
>14 (10^3/μL)	3 (2.6%)	3 (9.1%)	
Neut, ≥12 (10^3/μL)	3 (2.6%)	3 (9.1%)	0.1
Lymph, <0.8 (10^3/μL)	34 (29.1%)	7 (21.2%)	0.3
Hb <11 (g/dl)	53 (45.3%)	10 (30.3%)	0.1
Plat <150 (10^3/μL)	34 (29. %1)	10 (30.3%)	0.8
ALT >35 (U/L)	52 (44.4%)	16 (48.5%)	0.6
AST >35 (U/L	58 (49.6%)	23 (69.7%)	0.04
LDH >500 (U/L)	54 (46.2%)	18 (54.5%)	0.3
D-dimer >1000 (ng/ml)	71 (60.7%)	19 (57.6%)	0.7
Fr >500 (μg/L)	13 (11.1%)	3 (9.1%)	0.7

Contd...

Table 2: Contd...

	Favorable *n*=117	Unfavorable *n*=33	*P*
Cr >0.8 (mg/dl)	5 (4.3%)	4 (12.1%)	0.1
ICU admission			0.000
Yes	32 (27.4%)	22 (66.7%)	
No	85 (72.6%)	11 (33.3%)	
Days between symptom onset and admission, Median (IQR)	5 (4-6.5)	6 (5-7)	0.02
Days between symptom onset and Remdesivir prescription, Median (IQR)	5 (4-7)	6 (5-7)	0.008
Hospital stay, days Median (IQR)	6 (6-8)	10 (7-14.5)	0.000
Remdesivir complications (LFT rise)	43 (36.8%)	14 (42.4%)	0.5

Data are presented as numbers (percentages) unless otherwise stated. Alt: Alanine transaminase; Ast: Aspartate transaminase; Cr: Creatininin; CRP: C-Reactive Protein; Fr: Ferritin; Hb: Hemoglobin; ICU: Intensive Care unit; IQR: Inter Quartile Range; LDH: Lactate dehydrogenase; LFT: Liver Function Test; Lymph: Lymphocyte; Neut: Neutrophil; Plt: Platelet; WBC: White Blood Cells

Table 3: Recovery rate and oxygen support needed after Remdesivir prescription based on the baseline O_2 support needed at admission time

	O_2 support status at the baseline		
	IMV *n*=4	NIPPV/high flow oxygen *n*=67	Low-flow oxygen *n*=79
O_2 support status post treatment			
Death	4 (100)	8 (11.9%)	0 (0%)
Hospitalized on IMV	0 (0%)	1 (1.5%)	0 (0%)
Hospitalized on NIPPV/high- flow oxygen	0 (0%)	24 (35.8%)	0 (0%)
Hospitalized on low-flow oxygen	0 (0%)	20 (29.9%)	8 (10.1%)
Hospitalized on room air	0 (0%)	0 (0%)	15 (19.0%)
Discharged at room air	0 (0%)	14 (20.9%)	56 (70.9%)
Recovery	0 (0%)	34/67 (50.7%)	71/79 (89.9%)

All data are presented as number (percent). IMV: Invasive Mechanical Ventilation; NIPPV: Non-Invasive Positive Pressure Ventilation

Also, Wang *et al*.[8] found that injectable Remdesivir did not significantly improve the virus's recovery time, mortality, or elimination time in patients with severe COVID-19 compared to those receiving a placebo. But on the other hand, Beigel *et al*.[4] reported that taking this drug decreased the recovery time, and Budi Saroyo *et al*.[20] stated that the Remdesivir protocol in pregnant women with moderate to severe cases of COVID-19 led to improved clinical outcomes with a shorter recovery period and a lack of adverse effects during the hospitalization period. According to another study on 86 pregnant and postpartum women with severe COVID-19, those receiving Remdesivir had high recovery rates with a low rate of serious adverse effects.[13-15] Among 86 pregnant and postpartum women with severe COVID-19 who received Remdesivir, decreasing in oxygen requirement and recovery rates were high.[15] A systematic review of 13 observation studies with 113 pregnant people demonstrated that Remdesivir improved the clinical condition of pregnant patients with COVID-19, especially those with a better clinical status at baseline and who received earlier Remdesivir treatment.[21] Similar to these studies, the present investigation confirmed that Remdesivir prescription in the early stages led to favorable hospital and pregnancy outcomes in patients who need less oxygen at the time of hospital admission.

A pivotal point to be considered for Remdesivir prescription in pregnancy is neonatal and maternal safety. Some studies have demonstrated the safety of Remdesivir during pregnancy.[14,22] In another systematic review, the most reported adverse event was transaminitis, in which 10-day Remdesivir treatment had more incidence than the 5-day treatment.[21] In the present study, 57 (38%) women exhibited some elevated liver enzymes with no apparent neonatal adverse effects.

The optimal time for Remdesivir administration is not known. Albert Rizzo, the chief medical officer of the American Lung Association, contends that patients may obtain the most benefits if they receive the medication before the onset of any respiratory problem. A study on non-pregnant patients infected by COVID-19 suggested that Remdesivir prescribed less than 9 days from symptom onset was associated with lower mortality. In another study, Remdesivir initiation ≤9 days from symptom onset was associated with a significant decrease in mortality rate.[23] The findings of this research on pregnant patients suggested that a shorter time elapsed between symptom onset and Remdesivir prescription improved hospital and pregnancy outcomes.

The sample size of the present study was small, and further data are still needed to draw definitive conclusions about the safety and effectiveness of the Remdesivir prescription in pregnant women infected by COVID-19. Cross-sectional studies similar to the current research and other papers reviewed here do not have a control group. Thus, RCT is still needed to evaluate the efficacy of Remdesivir in pregnant women infected with COVID-19.

Conclusion

COVID-19 treatment in pregnant patients is a significant challenge requiring a comprehensive approach. The results of this study revealed that the early use of Remdesivir, as one of the therapeutic alternatives, in pregnant women with moderate COVID-19 symptoms could reduce the duration of symptoms and length of hospitalization, leading to favorable pregnancy outcomes.

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Consent for publication

The patient had assigned the informed consent with the aim of reporting the present article.

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Conflicts of interest

There are no conflicts of interest.

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