



## A CASE REPORT – COVID 19 POSITIVE EARLY 2ND TRIMESTER PREGNANCY TREATED WITH SYSTEMIC STEROIDS AND REMDESIVIR

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### ABSTRACT

SARS COV-2 is single standard positive sense RNA virus first identified in late December 2019 in Wuhan China. The clinical illness caused by SARS COV-2 was subsequently named as COVID-19. It was declared as Global Pandemic by World Health Organization (WHO) in March 2020. Here we discuss a COVID-19 positive patient in early 2<sup>nd</sup> trimester of pregnancy, requiring hospital admission and treatment with a systemic steroid and Remdesivir. After illness her pregnancy was uneventful till 37 weeks. When she develop leaking per vaginam and color doppler changes in ultrasound, then her cesarean section was done and a healthy baby was delivered.

**KEYWORDS :** Covid-19, Early Second Trimester, Systemic Steroids, Remdesivir

### INTRODUCTION

SARS COV-2 infection has caused by Novel Coronavirus Disease - 2019 (COVID-19) has become the major health problem worldwide with thousands of mortality cases.

The clinical symptoms are variable from asymptomatic to hypoxemic respiratory failure and even death.

Physiology and immune system changes during pregnancy lead to increased susceptibility towards viral infection and hence worsening the outcome. Most cases contacted are from 2nd trimester of pregnancy.

COVID-19 has a spectrum of clinical manifestations ranging from mild to severe critical illness. In most of the pregnant women, the clinical symptoms appear to be mild similar to nonpregnant adult population, while approximate 14% of pregnant women infected by SARS COV-2 have severe and critical symptoms.

Mild symptoms are fever, cough, anosmia and no dyspnea. Moderate symptoms appear as lower respiratory tract disease with O<sub>2</sub> saturation decreases by >94%. In severe cases O<sub>2</sub> saturation decreases by <94% with respiratory rate >30/min and radiological finding of lungs infiltration >50%. In critical symptoms, respiratory failure along with multi-organs dysfunctions or failure is seen. Viral pneumonia is the leading cause of mortality among pregnant women worldwide.

Diagnosis of COVID-19 in pregnant women follows same protocol as that of non pregnant patients. Antigen testing may be done but for the confirmation of the disease RTPCR must be done from nasopharyngeal swab sample. CT scan along with clinical findings and other blood investigations are used to predict the diagnosis of the disease.

The management of COVID-19 patient with pregnancy is a challenging job as still there is no standard protocol available for the treatment of pregnant patients.

Here in our case report we used systemic methylprednisolone (Steroid) and Remdesivir along with other supportive measures.

### Why we use steroid?

Death among COVID 19 patient is mainly to bout of acute respiratory distress syndrome (ARDS) followed by direct and

indirect injury to the lungs. Three features of ARDS are-

1. Increased breathing rate (Tachypnoea)
2. Abnormal low oxygen saturation (respiratory hypoxemia)
3. Diffused lungs infiltrations (Opacities on chest x-ray)

In severe COVID-19 cases respiratory system shows an abnormally viscous immune response through a series of pro inflammatory mediators and cytokines. Steroids decrease inflammatory response by decreasing the concentration of circulating pro-inflammatory mediators and cytokines. They control inflammations by causing immune-suppressant. In case of pregnancy one should give steroids which have least side effect on fetus. Studies show that both hydrocortisone and dexamethasone cross the placenta while methylprednisolone does not crosses the placenta.

### What is steroid and their related studies?

RECOVERY trail says that low dose dexamethasone reduces mortality by upto 1/3<sup>rd</sup> COVID-19 patient on mechanical ventilation and 1/5<sup>th</sup> among those receiving supplementary Oxygen.

RCOG recommended that pregnant women with moderate to severe COVID-19 should receive oral or intravenous prednisolone or H.cort. It also helps in decreasing their stay on mechanical ventilation. But pregnant women cannot receive steroid for prolong period as it causes deleterious effect on the growing fetus.

Steroid like betamethasone and dexamethasone cross the placenta and help in lungs maturity but if they are used for prolong period they causes chorioamnionitis, Premature Rupture of Membrane (PROM), increase concentration of amino acids and hyperglycemia.

Repeated use of steroids lead to decrease in fetal body and breathing movements and may lead to Intrauterine Growth Restriction (IUGR), Low Birth Weight babies (LBW), fetal hypoglycemia and increase incidences of early neonatal sepsis.

So, it is actually a debatable topic whether to give steroid in mild to moderate cases or not. It actually depends on risk and benefit ratio. Many trials says that the placenta through a distinct enzyme, metabolises several corticosteroid. Placenta metabolises more prednisolone and betamethasone than beclomethasone and dexamethasone. It shows that placenta protect the fetus from corticosteroid side effect through an

extensive metabolism to inactivates products. So, it is concluded that methylprednisolone is relatively safer than dexamethasone and others steroids, when used for prolong duration. Also, some studies says that methyl prednisolone achieve higher concentration in lungs and is vastly distributed by volume, stays in lungs for longer duration of time and is highly lipid soluble so it protect lungs to a great extent.

**Why Remdesivir?s**

Remdesivir inhibits severe acute respiratory syndrome Coronavirus-2 (SARS COV-2) replication by inhibiting RNA dependent RNA polymerase. It is originally made for the treatment of EBOLA virus. Recent studies have shown a shortened time to recovery in patients with COVID-19 who are treated with Remdesivir.

But unfortunately pregnant women were excluded from ADAPTIVE COVID-19 treatment trials [ACTT-1] and SIMPLE trial which shows promising results of Remdesivir treatment in SARS COV-2 infection.

But luckily RCTS done during eobolaepidemic has shown that Remdesivir can be safely used in pregnancy. Still data regarding use of Remdesivir in pregnant women with moderate to severe COVID-19 are limited.

Based on the above data emergency use authorization of Remdesivir was granted by US-FDA, ministry of health and family welfare India.

Here we are reporting a case of early second trimester COVID-19 pregnancy treated with systemic methylprednisolone and remdesivir and other supportive treatment.

**Case Study**

Mrs. XYZ, a primigravida at 16 weeks 3 days of gestation was tested COVID-19 positive through RT-PCR. She was admitted to the Maharani Laxmi Bai Medical College, Jhansi Covid HDU with complain of fever for five days, cough and breathless for 5 days. Her breathlessness was progressive in nature to an extent that she was not even able to lie down in supine position. There is no significant past history and medical she has regular antenatal checkups.

At time of admission her vitals BP=120/70Hg, PR=120 bpm, SPO<sub>2</sub>=92% at Room temperature, temp=101°f, PR=28/min.

Her chest x-ray was done with protection of lead shield which shows – patchy non homogenous asymmetrical Opacification in Bilateral lungs fields, showing predominantly in peripheral and lower zone, appearance consistent with atypical pneumonia possibly of COVID infection.



She was admitted to COVID HDU ward and was started with supportive medications- injectable antibiotics, antipyretics, analgesics, nebulization and cough syrup.

On her 2<sup>nd</sup> hospital admission day her breathlessness worsens. She was started with off and on oxygen and nebulization. A multidisciplinary team approach was done with the attending doctors and the decision of gives systemic Steroid, Remdesivir and convalescent plasma was taken.

As the patient herself and her husband were doctors and they were well aware of the risk and benefits of these drugs, they give their positive consent to start these drugs.

Then she was administered with I.V. Methylprednisolone 80mg-twice daily, Injection Remdesivir loading dose followed by maintenance dose, Injection Enoxaparin 0.5mg s/c and 2 units of convalescent plasma. After 5 days, dose of steroid taper down. Her breathless improves and heparin stops after 6 days and she was discharged from the hospital after 8 days still COVID-19 positive but for home isolation. Finally her RTPCR report came negative on day 16.

Before her illness all her blood investigations, triple marker, NT/NB scanning are within normal limits. After discharge from the hospital at 22 weeks of gestation level-2 scanning was done which was normal. She was on normal antenatal medicines. Again a repeat ultrasound was done at 32 weeks of gestation which shows prematurity of placenta and rest all normal.

At 37 weeks of gestation slight leaking started again, a ultrasound was done which shows liquor towards lower side, mild IOGR, changes in color Doppler, decrease uteroplacental and cerebro placental blood flow, HC <5<sup>th</sup> percentile, AC <5<sup>th</sup> percentile and signs of fetal hypoxia. Next day her cesarean section was done and she delivered a baby of weight 2.1 kg. Both mother and baby were in stable condition.

Para-meter	Before admission	HD1	HD2	HD3	HD4	HD5	HD6	HD7	HD8
CRP	19.4	25		20		7.5			5.0
Ferritin	96.0	100				90			
TLC	6500	10000				15200			
Hb	11.8	10.8				9.6			
Pt	1.5lac	1.8				2.8			
D. Dimer	2.4	2.0		2.0		1.0			1.0
SGPT	80	66.1				150			
SGOT	90	52.0				159			
ESR	50	55				45			30

**DISCUSSION**

Based on the above facts and data, we can conclude that one can use systemic methylprednisolone for the patient of COVID-19 with moderate to severe disease for duration as stipulated by the country specific COVID-19 guidelines. For developing countries one can use H.cort as it is a cheaper alternative as is as effective in saving the life of patient as other.

When we talk about Remdesivir although there is no broad conclusion available but still we found that Remdesivir is safe and possibly effective in treatment of patient with moderate to severe COVID-19 disease.

No major side effects and no immediate fetal complications were seen. The duration of positivity was of 16 days but the patient was in stable condition after completing the course of Remdesivir and steroid.

Although towards the end of pregnancy she faces certain post COVID changes in the ultrasonography but at the end she delivers a healthy baby.

So in the end we concluded that this case emphasizes on multidisciplinary approach and prompt treatment in the management of COVID-19 patient, gave a positive outcome thus can reduce the maternal mortality rate to a great extent.

As the data for the treatment of COVID-19 positive pregnant patient is very limited so these types of case-reports may help in bringing a part of systemic reviewing and to formulate evidence based guidelines.

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