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Severe COVID-19 with 32 Weeks of Pregnancy Treated by Convalescent Plasma: A Case Report

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Abstract

Pregnant women with coronavirus disease 2019 (COVID-19) show overall similar clinical features as that of non-pregnant adults with COVID-19, except perhaps for higher risk of admission to the Intensive Care Unit (ICU) and mechanical ventilation. Apart from the established therapeutic options used in COVID-19 like steroid, low molecular weight heparin role of COVID Convalescent Plasma (CCP) has never been evaluated. We present a case of a pregnant woman, treated with CP at the AMZ hospital, Dhaka, Bangladesh.

Keywords: COVID convalescent plasma • Neutralizing titre • Transfusion reactions

Introduction

Coronavirus disease 2019 (COVID-19) caused by a novel Coronavirus was first identified in Wuhan (China) in December 2019. The spread of COVID-19 was so rapid that within a few months it became a pandemic [1,2]. The most common presentations of COVID-19 are cough, fever, dyspnoea and malaise, but some patients present severe manifestations such as respiratory failure, acute respiratory distress syndrome, septic shock, multi-organ failure, and Disseminated Intravascular Coagulation (DIC) [3,4]. Amongst pregnant women with COVID-19, more than 85-90% has no or mild symptoms, 5-10% have symptoms severe enough to warrant hospitalization and at times oxygen therapy but no mechanical ventilation. Only 1-2% develops critical disease requiring mechanical ventilation and at times leading to death. Comorbidities such as diabetes, hypertension, chronic cardiovascular diseases, pulmonary disease, and malignancies exacerbate the disease, particularly in older patients and pregnant women, especially in the third trimester [3,4]. Pregnant women with severe CVID-19 are left on with not much specific treatment option like antiviral, monoclonal antibody, colchicine, regenerome's antibody cocktails etc.

Case Report

A 27-year-old pregnant lady (primi and 32 weeks) came to us with the complaints of respiratory distress for 7 days which became severe for last 3 days, fever and headache for 7 days also. On general physical examination she was found tachypnic, tachycardia, febrile and hypoxic measured O_2 saturation was 88% in room air. Blood pressure was 140/90 mm of Hg. Systemic examination revealed, crackles on the both lungs base, no additional breath sound, no murmur, no organomegally, no enlarged lymphnodes were detectable. Rt-PCR for COVID-19 was done on 17/10/2020 and found detected. So, on admission she was diagnosed as case of severe COVID-19 positive with 32 weeks of pregnancy (primipara). Following admission (17/10/2020) in the hospital, oxygen therapy through nasal cannula was started. As she was diagnosed as a case of COVID-19 positive with 32 weeks pregnancy so no antiviral could be given. Antipyretic with nebulization was given routinely. But she could not feel better as her respiratory distress became worsening. Demand of oxygen was growing higher and she needed 15 l/min with non-re breather mask from 21/10/2020. For this reason, decision was taken for using COVID Convalescent Plasma (CCP) therapy from suitable donor who had past minimum 14 days from become negative. 200 ml CCP was given on 22/10/2020 after screening and cross-matching. Plasma was taken by Spectra Optia Apheresis System (USA) and ELISA was done by Euroimmun (Germany) which OD value was 2.8. Oxygen demand gradually lower down from 23/10/2020 and she was suitable with 5 l/min oxygen through face mask from 24/10/2020. Oxygen therapy discontinue from 25/10/2020 as she felt better clinically. She was discharged from hospital on 27/10/2020 and continuous follow-up was maintained under her gynaecology consultant. Eventually she developed gestational diabetes mellitus poly-hydromniuos on her 35th weeks. Decision was taken for doing elective Caesarean Section (C/S)

Table 1. Laboratory examinations.

Date	Test	Value
17.10.2020	Rt-PCR (SARS-CoV-2) RNA	Detected
	D-Dimer	1.042 mg/l
	S. ferritin	23 ng/ml
19.10.2020	Hb	12.1 gm/dl
	ESR	34 mm in 1st hour
	WBC	4000/cumm
	Platelet	1,60,000/cumm
	Neutrophil	70%
	Lymphocyte	24%
	Eosinophil	02%
	Monocyte	04%
	CRP	38.0 mg/l
22.10.2020	CRP	25.50 mg/l
	D-Dimer	0.62 mg/l
	S. ferritin	28 ng/ml
	Prolactin	0.11 ng/ml
23.10.2020	D-Dimer	0.75 mg/l
	CRP	16.31 mg/l
	Hb	11.8 gm/dl
	ESR	52 mm in 1st hour
	WBC	4000/cumm
	Platelet	2,21,000/cumm
	Neutrophil	66%
	Lymphocyte	27%
	Eosinophil	01%
	Monocyte	06%
24.10.2020	D-Dimer	0.6 ng/l
	CRP	15.22

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on her 38th weeks of pregnancy. On due date C/S was done and a baby boy delivered with macrosomic and on birth CBG was 15 mmol/l. Otherwise both were okay (Table 1).

Discussion

Pregnant women, especially at the end of pregnancy, are more susceptible to severe manifestations of infections, including COVID-19, probably due to changes in the immune system and physical stature6. Therefore, to reduce probable complications, pregnant women should be monitored for early diagnosis and given appropriate and immediate treatment [9]. Chen et al. [6] reported nine pregnant women in the third trimester with an improved clinical course during hospitalization without complications. On the other hand, Liu et al. [7] investigated thirteen pregnant women with COVID-19 and reported that during the study period six of these patients were transferred to the intensive care unit. Karami et al. [3] reported a 27-year-old pregnant woman at 30 weeks and 3d gestation with COVID-19 and a deteriorating clinical course that subsequently died due to multi-organ failure.

Main challenge in blood transfusion is to reduce transfusion transmitted infection. As we do routinely screening of HbsAg, Anti HCV, TPHA, Malaria and HIV so possibility is less in every transfusion. But confirmatory test cannot be done routinely as we have no such facility in our centre. Moreover, we cannot don pre- donation leukoreduction which is essential in such condition. We can use leukadeplated filter for reducing possible hazard. But as this types of filter device was not readily available in our centre so, we did not use leukadeplated filter. Possible complications of plasma transfusion during pregnancy are transfusion associated circulatory overload, transfusion associated acute lung injury, non-haemolytic transfusion reaction, allimunization, foetal distress, intrauterine foetal death. Available data regarding CCP showed most common complication is TACO which increased mortality. Fortunately, nothing happened in our case. Clinical and laboratory findings in our patient indicated improved health status during hospitalization and she responded to treatment, especially during the second week and as mentioned, only D-Dimer was raised up to discharged from hospital. Follow-up of baby showed VDRL negative and mother were negative in pre-anaesthetic check-up done before operation. TTI did not occur in our study

Conclusion

Though recent study suggests that CCP have no role on reduction in COVID related mortality, our experience on this emerging coronavirus infection in pregnancy is possibly safe and should be used in severe cases. Randomized case control study specially phase Ⅱ to ensure the safety the proper use of CCP.

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