Extracorporeal membrane oxygenation in pregnancy: a bridge to delivery and pulmonary recovery for COVID-19–related severe respiratory failure

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TO THE EDITORS: The study by Yin et al[1] entitled, "Extracorporeal membrane oxygenation (ECMO) in pregnancy: a bridge to delivery and pulmonary recovery for COVID-19-related severe respiratory failure," has been a milestone in the road to maternofetal management of severe COVID-19. Pregnancy prolongation with the aid of ECMO could successfully serve as a bridge to maternal respiratory recovery. We wish to put forth certain queries to comprehend the results better. We learned that 3 of 5 women were given convalescent plasma and that 2 of 5 women were administered tocilizumab. It would be helpful if the authors could tell us about their criteria for starting the aforementioned therapeutic regimes and which patients received them.

It will be a great favor if the authors could mention the fourth patient in a bit more detail. We noticed that she suffered a cardiac arrest while on ECMO. How many days of ECMO did she have before she experienced cardiac arrest and how was she revived? Moreover, we are quite interested to learn about patient 3 who developed hemolysis, elevated liver enzymes, and low platelet count while on ECMO despite being normotensive initially. On the contrary, patient 1, who was preeclamptic, did not develop such hypertensive complications.

Most mothers had developed postpartum mood disorders, which was quite obvious after prolonged stress. Did they require pharmacotherapy or could they be managed with psychosocial counseling? We recommend that the authors make a long-term follow-up of both the mothers and their infants and report their long-term health status in subsequent studies. ■

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The authors report no conflict of interest.

REFERENCE

1. Yin O, Richley M, Hadaya J, et al. Extracorporeal membrane oxygenation in pregnancy: a bridge to delivery and pulmonary recovery for COVID-19-related severe respiratory failure. Am J Obstet Gynecol 2022;226:571–6.e5.

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Extracorporeal membrane oxygenation in pregnancy: details on novel therapies and cardiac, preeclampsia, and mood disorder complications

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We thank Sarkar et al for their interest in our findings and thoughtful questions regarding therapeutics and complications in our study entitled, "Extracorporeal membrane oxygenation in pregnancy: a bridge to delivery and pulmonary recovery for COVID-19-related severe respiratory failure."[1]

Regarding therapies, 3 out of the 5 patients were given convalescent plasma and 2 out of the 5 were administered tocilizumab. The criteria for initiation of convalescent plasma treatment at our center at that time was a SARS-CoV-2 infection requiring hospitalization, and the criteria for initiation of tocilizumab was a new-onset requirement for oxygen supplementation with the ability to start tocilizumab within 72 hours of starting oxygen supplementation.[2] A contraindication for tocilizumab treatment was a history of organ transplant. The patients who were given convalescent plasma were cases 1, 2, and 4 and those given tocilizumab were 1 and 5. This and additional information on COVID-19 treatment are published with Supplemental Table 1 in the final version of this article.

Patient 4 had an episode of long sinus arrest on hospital day (HD) 45, which corresponded to extracorporeal membrane oxygenation (ECMO) day 39 of 68. The ECMO circuit

clotted and required exchange with development of a severe left-sided pneumothorax shortly thereafter, leading to hypoxia and associated bradycardia and subsequently cardiac arrest. The patient improved after chest tube placement and cardiopulmonary resuscitation with no further cardiac events.

Both patients 1 and 3 developed hemolysis, elevated liver enzymes, low platelet count (HELLP) syndrome. Patient 1 did not have liver enzyme complications, but she did have severe range blood pressures and decreasing platelet counts, as low as 96 mg/dL, which prompted her cesarean delivery. Patient 3 had worsening liver enzymes as early as HD 19, peaking on HD 25 with aspartate aminotransferase levels at 895 U/L, alanine aminotransferase levels at 743 U/L, and lactate dehydrogenase levels at 1302 U/L with continued hypertension requiring labetalol. The diagnosis of HELLP was definitively made retrospectively in both patients after observing rapid improvements in their laboratory results and blood pressures postpartum. In the antepartum period, other differential diagnoses for thrombocytopenia included ECMO-related shear stress and membrane absorption of key platelet factors,[3] preeclampsia-like syndrome observed in severe COVID-19 infection,[4] and heparin-induced thrombocytopenia, making it more difficult to diagnose HELLP and proceed toward delivery in pregnant patients on ECMO.

Mood disorders were common after ECMO in pregnancy. Patient 1 developed depression with significant triggers related to the inability to breastfeed after decannulation. She did not require medications and received psychosocial counseling. An outpatient psychiatry follow-up at 3 months postpartum was attempted, but because of telemedicine connectivity issues, this was not completed. Patient 3 had anxiety requiring trazodone and sertraline and was doing well at the 1-month follow-up. Patient 4 developed insomnia and was started on quetiapine and gabapentin with a stable mood at the 1-month follow-up and a plan for outpatient posttraumatic stress therapy. We agree that long-term follow-up of postpartum mood disorders, especially after an intensive care unit admission during the peripartum period, is needed and recent studies have confirmed an association between psychiatric disorders and COVID-19 infection.[5] ■

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REFERENCES

1. Yin O, Richley M, Hadaya J, et al. Extracorporeal membrane oxygenation in pregnancy: a bridge to delivery and pulmonary recovery for COVID-19-related severe respiratory failure. Am J Obstet Gynecol 2022;226:571–6.e5.
2. Gupta S, Wang W, Hayek SS, et al. Association between early treatment with tocilizumab and mortality among critically ill patients with COVID-19. JAMA Intern Med 2021;181:41–51.
3. Sniderman J, Monagle P, Annich GM, MacLaren G. Hematologic concerns in extracorporeal membrane oxygenation. Res Pract Thromb Haemost 2020;4:455–68.
4. Mendoza M, Garcia-Ruiz I, Maiz N, et al. Pre-eclampsia-like syndrome induced by severe COVID-19: a prospective observational study. BJOG 2020;127:1374–80.
5. Taquet M, Luciano S, Geddes JR, Harrison PJ. Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62354COVID -19cases in the USA. Lancet Psychiatry 2021;8:130–40.

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Interventions to decrease complications after shoulder dystocia: a systematic review and Bayesian meta-analysis: a reply

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TO THE EDITORS: We congratulate Wagner et al[1] for performing a systematic review and meta-analysis of 16 reports on shoulder dystocia (SD) training and clinical outcomes, but we disagree with the interpretation of their results. The article's key finding that brachial plexus injury (BPI) incidence decreases after simulation training, is true. Moreover, the increase in SD incidence after training is attributable to improved provider awareness of the condition. SD incidence is varied in large part because the diagnosis is subjective. We have found that training with force measurement directly affects the participants' perception of impeded delivery.

Most of the included studies compared clinical outcomes after training for many years, often ≥8 years. There has been an increase in cesarean delivery rates over time: 22.3% in 1990 to 32.3% in 2014 in North America.[2] Certainly, there can be no causative conclusion that simulation training explains this rise over time.

The authors compared 2 studies with opposing results to question whether simulation training can reduce the