

HELLP Syndrome and COVID-19: A Case Report and Literature Review

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CONCLUSION

There is a paucity of literature detailing a possible correlation between COVID-19 infection and the development and progression of HELLP syndrome. This case report and review should remain hypothesis-generating and prompt larger, multi-center studies to better describe and elucidate the interplay between these two conditions.

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INTRODUCTION

Liver disease affects approximately 3% of pregnant women and is associated with increased morbidity and mortality. This is worsened by the increased incidence of liver disease in pregnancy with COVID-19 infection. As incidence for these diseases rises, the importance of studying these conditions must also. We present a case of a patient with acute COVID-19 infection and HELLP syndrome as well as a summary of the associated literature.

CASE DESCRIPTION

- A 26-year-old G1P0 female at 32 weeks gestation with medical history of asthma, obesity, gestational diabetes, and hypertension, presented to the emergency department for evaluation of general malaise.
- She had COVID-19 infection 2 weeks prior to presentation with symptoms of fever, chills, and dyspnea.
- Three days after admission, there was an acute drop in platelets, hemoglobin, elevated LDH, hypertension, and elevation of LFTs highly suggestive of HELLP syndrome.
- She then underwent emergency cesarean delivery with rapid resolution of jaundice and LFT elevation.

Table 1: History of Present Illness on Admission

	Case 1 (our case)	Case 2 (1)	Case 3 (1)	Case 4 (2)	Case 5 (2)	Case 6 (2)	Case 7 (3)	Case 8 (4)	Case 9 (5)
Age (in years)	26	41	31	32	29	26	24	31	23
Gestation History	G1P0	G9P8L8	G2P1L1	G1P0	G3P2L1D1	G1P0	G1P0	G1P0	G2P1A2
Gestational age at presentation (in weeks)	32	22	29	34	37	39	29	31	21
Chief complaint	malaise	–	–	Myalgia, Jaundice, RUQ discomfort	Fever, pedal edema	RUQ pain, headache	Low platelet count	Myalgia, Jaundice, dark urine, diffuse abd discomfort	SOB, palpitations
Past Medical History	Asthma, obesity	None	None	None	None	None	ITP	None	DM1
COVID diagnosis	2 weeks before admission	On Admission	On Admission	On Admission	On Admission	2 days before admission	On admission	On admission	5 months before admission
Imaging findings on hospital admission	Not done	GGO	Peripheral opacities	GGO	GGO	GGO	GGO	GGO, bilateral pleural effusions	Consolidation
Abnormal vitals on admission	None	BP 99/57mmHg, O2 saturation 90% on 15L high-flow nasal cannula	None	None	BP 144/98mm Hg, 101F temperature	BP 160/100mmHg, HR 98	None	None	None

METHODS

We performed a literature review of relevant published articles through a PubMed search from March 2020 to May 2022. No case-control or cohort studies on the relationship between COVID-19 and HELLP syndrome identified. A total of 5 case reports were identified, with a total of 9 peri-partum women who developed HELLP syndrome and tested positive for COVID-19.

Table 2: Pertinent Laboratory Values on Admission

	Case 1 (our case)	Case 2 (1)	Case 3 (1)	Case 4 (2)	Case 5 (2)	Case 6 (2)	Case 7 (3)	Case 8 (4)	Case 9 (5)
Total WBC (x10 ⁹ /L)	11.6	25.3	5.6	4.9	5.8	6	9.3	17.2	30.7
Hemoglobin (g/dL)	9.2	12.7	14.8	9.3	8.6	10.1	10.4	–	9.2
Hct	27.8	87.4	44.2	–	–	–	31.3	–	–
Platelets	237	48	24	86	81	90	6	218	90
AST	292	192	43	626	524	589	346	–	546
ALT	425	88	17	228	230	300	477	558	287
ALP	106	–	–	122	128	134	–	–	119
Total bilirubin	6.3	–	–	8.8	9.9	9.4	–	9.28	5.4
LDH	–	1366	–	2500	2700	3100	971	1000	2051
CRP	–	8.4	–	60	91.7	78.5	30	2.4	–
D-Dimer	–	>35.2	–	5.53	6.62	6.23	–	–	7.94

RESULTS

The age of the patients ranged from 23-41 years (mean 29.2). 5 primigravida patients. The mean gestational age was 30.4 weeks. 6 patients diagnosed with COVID-19 on admission, 3 tested positive prior to admission. Ground-glass opacities seen in 7 patients. (Table 1) The mean AST, ALT, ALP, and total bilirubin levels (in mg/dl) of the group were 395, 290, 122, and 8.2, respectively. The median platelet level was 86,000 per mL. LDH levels were grossly elevated in all reported cases. (Table 2) 7 patients had undergone emergency cesarean section due to complications of HELLP syndrome. Outcomes included 6 living fetuses, 2 stillborn, 1 IUFD, and 1 maternal fatality. 6 of the patients had postoperative complications, including preeclampsia/eclampsia, hypertensive emergency, AHRF, ARF, acute blood loss anemia, sepsis, and CVA. (Table 3)

Table 3: Outcomes

	Case 1 (our case)	Case 2 (1)	Case 3 (1)	Case 4 (2)	Case 5 (2)	Case 6 (2)	Case 7 (3)	Case 8 (4)	Case 9 (5)
Fetus status on hospital admission	Fetal heart sounds present, regular	Fetal heart sounds present, regular	Decreased fetal tone	Absent fetal heart sound	Fetal heart sounds present, regular	Fetal heart sounds present, regular	–	Abnormal heart sounds, recurrent late decelerations	Fetal heart sounds present, regular
Days between hospital admission and delivery	3	5	0	0	0	0	9	1	5
Delivery method	Emergency cesarean section	Spontaneous vaginal delivery	Emergency cesarean section	Emergency cesarean section	Normal vaginal delivery	Emergency cesarean section	Emergency cesarean section	Emergency cesarean section	Emergency cesarean section
Fetal outcome	Living	IUFD	Living	Stillborn	Living	Living	Living	Living	Stillborn
Maternal outcome	Living	Living	Living	Living	Living	Living	Living	Living	Deceased
Post-operative complications	Preeclampsia	AHRF, ARF, Sepsis, CVA	Acute blood loss anemia	AHRF on postoperative day 3	Eclampsia, AHRF, Hematuria	None	None	Hypertensive emergency, abdominal wall hematoma, AHRF	Not applicable

REFERENCES

- Futterman, I., Toaff, M., Navi, L. and Clare, C., 2020. COVID-19 and HELLP: Overlapping Clinical Pictures in Two Gravid Patients. [online] Available at: <https://www.thieme-connect.de/products/ejournals/html/10.1055/s-0040-1712978> [Accessed 5 May 2022].
- Madaan, S., Kumar, S., Talwar, D., Jaiswal, A., Acharya, N. and Acharya, S., 2022. HELLP Syndrome and COVID-19: association or accident: A case series. [online] Available at: <https://journals.lww.com/jfmpc/Fulltext/2022/02000/HELLP_Syndrome_and_COVID_19__association_or_accident_.a_case_series.aspx> [Accessed 5 May 2022].
- Norooznejad, A.H., Nurzadeh, M., Darabi, M.H. et al. Coronavirus disease 2019 (COVID-19) in a pregnant women with treatment resistance thrombocytopenic purpura with and suspicion to HELLP syndrome: a case report. BMC Pregnancy Childbirth 21, 567 (2021). <https://doi.org/10.1186/s12884-021-04030-x>
- Braga, L. and Sass, N., 2020. Coronavirus 2019, Thrombocytopenia and HELLP Syndrome: Association or Coincidence?. [online] Available at: <https://www.scielo.br/jr/rbgo/a/Xrj/SHQsdSKTWb98NXVJmn/?lang=en> [Accessed 5 May 2022].
- Mahajan, O., Talwar, D., Jaiswal, A., Madaan, S., Khanna, S. and Shah, D., 2021. Fetal HELLP syndrome in pregnancy: A sequelae of Long COVID?. [online] Discoveryjournals.org. Available at: <http://www.discoveryjournals.org/medicalsecience/current_issue/v25/n114/A10.pdf>