Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

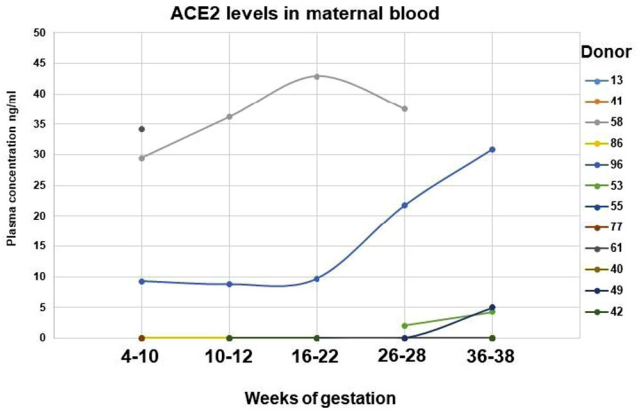

Figure 2. ACE2 in maternal blood. Plasma from twelve donors was analyzed across gestation for ACE2 by ELISA. For each donor 3-5 time points were analyzed. Donors 58, 96, 55, 49 and 53 showed measurable levels. The remainder were below the limit of detection (<0.5ng/ml). Spike controls confirmed recovery of ACE2 (not shown).

94 Perinatal outcomes of asymptomatic versus symptomatic COVID positive pregnant women

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OBJECTIVE: COVID-19 infection may be associated with placental changes including vasculopathy and thrombosis. The extent to which these findings translate to perinatal outcomes and correlate to symptomatology is unclear. The aim of the study is to examine whether placentally related perinatal outcomes differ in symptomatic vs. asymptomatic COVID positive women.

STUDY DESIGN: Retrospective cohort study of women with singleton gestations diagnosed with COVID infection by PCR and admitted to our institution for delivery from 3/12- 8/12/20. Women were categorized as symptomatic if they had COVID symptoms prior to or at presentation for delivery or developed any until discharge. Asymptomatic women did not develop any symptoms during the same period. Pregnancies with major congenital anomalies were excluded. The primary outcome was a perinatal composite of any of the following: small for gestational age, preeclampsia or abruption. Secondary outcomes are listed in Table 1. Chi-squared or Fisher's exact test were used for categorical variables and Mann-Whitney U tests for continuous variables. We fit a logistic regression model to adjust for confounders.

RESULTS: Of 189 COVID positive women admitted for delivery, 157 met inclusion criteria. 95(60.5%) women were asymptomatic and 62(39.4%) symptomatic. Baseline characteristics were similar between groups(Table 1A). The primary outcome was similar between the groups (24.2% vs 21%, p=0.64). There were no significant differences between groups in terms of birthweight, mode of delivery, NICU admission, blood transfusion or ICU admission. There were no cases of VTE. Symptomatic COVID infection was associated with higher risk for cesarean delivery (CD) for non-reassuring fetal status (p=0.035) and longer hospital stay (p<0.001)(Table 1B). After adjusting for confounders, the primary outcome was similar between groups (OR: 0.78, 95%CI 0.34, 1.77).

CONCLUSION: COVID positive pregnant women had similar placentally related outcomes, irrespective of symptomatology. Symptomatic women were associated with higher risk for CD for non-reassuring fetal status and had longer hospital stay.

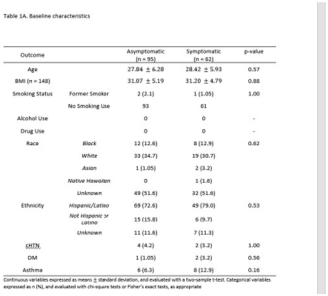
Table 1A. Baseline characteristics

Outcome		Asymptomatic (n = 95)	Symptomatic (n = 62)	p-value
Age		27.84 ± 6.28	28.42 ± 5.93	0.57
BMI (n = 148)		31.07 ± 5.19	31.20 ± 4.79	0.88
Smoking Status	Former Smoker	2 (2.1)	1 (1.05)	1.00
	No Smoking Use	93	61	
Alcohol Use		0	0	-
Drug Use		0	0	-
Race	Black	12 (12.6)	8 (12.9)	0.62
	White	33 (34.7)	19 (30.7)	
	Asian	1 (1.05)	2 (3.2)	
	Native Hawaiian	0	1 (1.6)	
	Unknown	49 (51.6)	32 (51.6)	
Ethnicity	Hispanic/Latino	69 (72.6)	49 (79.0)	0.53
	Not Hispanic or Latino	15 (15.8)	6 (9.7)	
	Unknown	11 (11.6)	7 (11.3)	
cHTN		4 (4.2)	2 (3.2)	1.00
DM		1 (1.05)	2 (3.2)	0.56
Asthma		6 (6.3)	8 (12.9)	0.16

Continuous variables expressed as means ± standard deviation, and evaluated with a two-sample t-test. Categorical variables expressed as n (%), and evaluated with chi-square tests or Fisher's exact tests, as appropriate

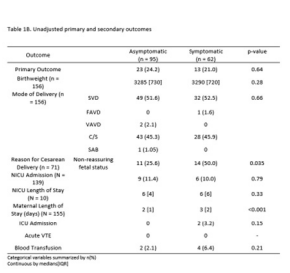
Table 1B. Unadjusted primary and secondary outcomes

Outcome		Asymptomatic (n = 95)	Symptomatic (n = 62)	p-value
Primary Outcome		23 (24.2)	13 (21.0)	0.64
Birthweight (n = 156)		3285 [730]	3290 [720]	0.28
Mode of Delivery (n = 156)	SVD	49 (51.6)	32 (52.5)	0.66
	FAVD	0	1 (1.6)	
	VAVD	2 (2.1)	0	
	C/S	43 (45.3)	28 (45.9)	
	SAB	1 (1.05)	0	
Reason for Cesarean Delivery (n = 71)	Non-reassuring fetal status	11 (25.6)	14 (50.0)	0.035
NICU Admission (N = 139)		9 (11.4)	6 (10.0)	0.79
NICU Length of Stay (N = 10)		6 [4]	6 [6]	0.33
Maternal Length of Stay (days) (N = 155)		2 [1]	3 [2]	<0.001
ICU Admission		0	2 (3.2)	0.15
Acute VTE		0	0	-
Blood Transfusion		2 (2.1)	4 (6.4)	0.21

Categorical variables summarized by n(%)
Continuous by median[IQR]

95 Elevated prenatal maternal stress during Covid-19 alters fetal biochemical profiles

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OBJECTIVE: To study the impact of prenatal maternal stress during the COVID-19 pandemic on in-vivo fetal brain biochemical profiles using magnetic resonance spectroscopy (MRS).

STUDY DESIGN: We prospectively enrolled low-risk healthy pregnant women without any complications during the COVID-19 pandemic. We compared brain biochemical profiles measured in fetuses before the COVID-19 pandemic with fetuses studied during the COVID-19 pandemic using noninvasive MRS. All study participants completed standardized questionnaires Perceived Stress Scale (PSS) and Spielberger State Anxiety Inventory (STAI-S) were scanned on a 1.5T GE MR scanner. Spectroscopy voxel was placed in the center of the fetal brain and spectra were acquire using PRESS sequence: TE/TR: 144/128, NSA: 128 and quantified using LCModel.

RESULTS: We studied 131 fetuses (107 health fetuses pre-COVID 19 and 24 and fetuses from healthy pregnant women during the pandemic) at a mean gestational age of 29.2 ± 4.7 and 29.0 ± 5.6 weeks, respectively (range: 18-37 weeks). Our data show significantly higher levels of lactate (p= 0.02) and scyllo-inositol (sI) (p=0.02) in fetuses from the pandemic cohort. Notably, higher levels of lactate were associated with higher STAI-S (p=0.006) and PSS scores (p= 0.019).

CONCLUSION: We observed higher levels of lactate, a byproduct of anaerobic metabolism, in the fetal brain of healthy pregnant women during the pandemic. Increased lactate in the fetal brain was associated with higher maternal stress and anxiety. We also observed higher levels of sI. Inositols are simple sugar alcohols and elevated levels of cerebral sI are correlated with altered glial and neuronal metabolism. While our data suggest altered fetal brain development during the COVID-19 pandemic, the mechanisms mediating these changes remain unclear. Long-term follow-up of this cohort is currently underway.