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.

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Correspondence

Is COVID-19 a risk factor for severe preeclampsia? Hospital experience in a developing country

To the Editor:

We have read with great interest the article published by Todros [1]; it states that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and preeclampsia have common pathophysiological characteristics, as shown by inflammatory changes. In the present work, we want to report our experience in a reference hospital of Peru regarding the clinical course of hypertensive disorders of pregnancy in pregnant women with SARS-CoV-2 infection.

Coronavirus disease 2019 (COVID-19) has been shown to cause systemic complications such as high blood pressure, kidney disease, thrombocytopenia, and liver injury [2]. The angiotensin-converting enzyme 2 (ACE2) receptor mediates the SARS-CoV-2 action that causes vasoconstriction resulting from renin-angiotensin system dysfunction [3]. During pregnancy, ACE2 plays an important role in the regulation of arterial pressure and expresses itself in excessive amounts in placental tissue, including syncytiotrophoblast, cytotrophoblast, endothelium, and vascular smooth muscle of the villi [4]. Intrauterine infection caused by COVID-19 can alter ACE2 expression, promoting a preeclamptic state. Mendoza, in his case series, postulates a preeclampsia-like syndrome in patients with severe SARS-CoV-2 infection, who meet the criteria for preeclampsia but who recover without delivery, only after the improvement of the respiratory condition [2].

Regarding the histopathological findings, Shaness et al. have shown that the placentas of patients with SARS-CoV-2 infection show a higher prevalence of decidual arteriopathy and other characteristics of poor maternal vascular perfusion such as decidual arteriopathy that includes atherosclerosis; fibrinoid necrosis and mural hypertrophy of membrane arterioles; changes that would reflect a systemic inflammatory state of hypercoagulability; findings similar to placental changes in hypertensive disorders of pregnancy; and changes related to oligohydramnios, fetal growth restriction, premature delivery, and fetal death [5]. While it is true that the reported cases are of patients with severe SARS-CoV-2 infection, the pathophysiology proposed so far would make us think that SARS-CoV-2 infection is a pro-inflammatory state, even in asymptomatic patients, that could be a risk factor for developing preeclampsia.

At the Obstetrics Department of a Peruvian Social Security hospital, from March to April 2020, Huerta et al. [6] reported the first series of cases of pregnant women with COVID-19 in Peru. This study included 41 female patients, of which 68 % were asymptomatic, 19.5 % had mild infection and 4.8 % had severe pneumonia that required enter the intensive care unit and non-invasive ventilation. The most frequent type of delivery was caesarean section (76.5 %) and the most frequent indication was a history of caesarean section (48.3 %) followed by presenting dystocia (20.7 %) and hypertensive disorders of pregnancy in 10.3 %. Also, leukocytosis was evidenced in 26.8 %, thrombocytopenia in 14.6 % and transaminasemia in 31.7 % of patients. No maternal deaths or fetal deaths were reported.

Furthermore, at the same Department of the above-mentioned Hospital, from May 2020 to date, we have treated 20 pregnant women with a serological diagnosis of SARS-CoV-2 infection who developed preeclampsia (Table 1). Eleven patients were pregnant at term, and there was only one twin pregnancy. Regarding the respiratory symptoms, 16/20 (80 %) patients were asymptomatic, with the remaining patients exhibiting mild symptoms. The most frequent findings in their laboratory tests were as follows: hypertransaminasemia, 40 %–65 %; leukocytosis, 30 %; lymphopenia, 15 %; and elevated C-reactive protein levels, 10 %. Of all the patients, 15 % (3/20) met the criteria for gestational hypertension and 15 % (3/20) met the criteria for preeclampsia without signs of severity, whereas 70 % (14/20) met the criteria for severe hypertensive disorders of pregnancy, comprising nine patients with severe preeclampsia; two with eclampsia; and five with hemolysis, elevated liver enzymes and low platelet count syndrome. The main route of delivery was cesarean section, which was performed in 85 % (17/20) patients; one hysterectomy was performed for placenta accreta. The fetal death rate was 9.5 % (2/20). Furthermore, 71 % of the newborns had appropriate weight for their gestational age and 9.5 % were small for gestational age. Only one newborn tested positive in the nasopharyngeal swab test for SARS-CoV-2 within the first 24 h of life.

In conclusion, based on these preliminary findings, we suggest that SARS-CoV-2 infection, by inducing a pro-inflammatory state, predisposes pregnant women to a greater severity of the course of preeclampsia, even when severe respiratory symptoms are absent. We suggest the need for more scientific evidence to confirm this possible association.

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Table 1
Clinical and biochemical characteristics of patients with serological diagnosis of COVID-19 and Hypertensive Pregnancy Disorders. Source: Data obtained from the Obstetrics inpatient Department. Hospital Nacional Edgardo Rebagliati Martins. March-August 2020. AST: Aspartate aminotransferase. * Patients with lymphopenia (lymphocytes <1000 cells/mm^3). + Patients who had stillbirth.

Case	Age	Gestational Age	Parity	Symptoms	White blood cell x 10 ^{3} (Lymphocytes %)	AST (U/L)	Delivery	Hypertensive Pregnancy Disorder
1	39	39	Multiparity	Asymptomatic	7.5 (16.7)	64	Caesarean Section	Severe Preeclampsia
2	33	34	Multiparity	Asymptomatic	9.1 (31.9)	53	Caesarean Section	Severe Preeclampsia
3	43	40	Multiparity	Asymptomatic	12.3 (28.4)	36	Caesarean Section	Severe Preeclampsia
4	21	36	Nulliparity	Asymptomatic	7.4(25.6)	42	Caesarean Section	Mild Preeclampsia
5	31	33	Nulliparity	Asymptomatic	9.3 (27)	53	Caesarean Section	Severe Preeclampsia
6	33	38	Multiparity	Asymptomatic	7.7 (22.2)	14	Caesarean Section	Gestational Hypertension
7	45	38	Multiparity	Asymptomatic	14.5 (32.8)	25	Caesarean Section	Severe Preeclampsia
8	42	40	Multiparity	Headache	8.8 (19.2)	51	Vaginal Delivery	Gestational Hypertension
9	32	40	Multiparity	Asymptomatic	19.2 (4.73) *	39	Vaginal Delivery	Mild Preeclampsia
10	37	40	Multiparity	Asymptomatic	8.4 (35.3)	16	Caesarean Section	Severe Preeclampsia
11	45	34	Nulliparity	Asymptomatic	6.0 (15.8) *	27	Caesarean Section	Severe Preeclampsia and Eclampsia
12	33	39	Multiparity	Asymptomatic	10.2 (33.9)	27	Caesarean Section	Gestational Hypertension
13	29	34	Multiparity	Asymptomatic	18 (3.7) *	904	Caesarean Section	Severe Preeclampsia and Eclampsia
14	39	39	Multiparity	Asymptomatic	11 (27)	64	Cesarean Hysterectomy	Hellp Syndrome
15	29	36	Nulliparity	Asymptomatic	6.8 (21.6)	449	Caesarean Section	Hellp Syndrome
16	32	37	Multiparity	Asymptomatic	10.1 (27.5)	16	Caesarean Section	Mild Preeclampsia
17	17	23	Nulliparity	Cough	7.9 (17.7)	59	Caesarean Section	Hellp Syndrome+
18	27	23	Nulliparity	Cough	7.8 (17.8)	54	Caesarean Section	Hellp Syndrome
19	24	39	Nulliparity	Asymptomatic	12.7 (22.9)	33	Caesarean Section	Severe Preeclampsia
20	31	33	Multiparity	Fever	9.3 (29.9)	288	Vaginal Delivery	Hellp Syndrome +

Declaration of Competing Interest

The authors report no declarations of interest.

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Universal screening identifies asymptomatic carriers of SARS-CoV-2 among pregnant women in India

Dear Editor,

Asymptomatic women with coronavirus disease 2019 (COVID-19) are at risk of infecting their newborns and also pose a risk to healthcare providers and other patients [1,2,3]. Considering this, Indian Council of Medical Research (ICMR) recommended universal testing for SARS-CoV-2 in pregnant women [4]. Maharashtra is the worst-hit state in India and universal screening strategy for pregnant women was implemented in several public hospitals during this time. Herein, we report the outcome of implementation of this strategy.

Women presenting in labour or likely to deliver in next 5 days were screened for SARS-CoV-2 as per ICMR guidelines [4]. Data from 25th April to 20th May, 2020 was collected from 15 participating hospitals of PregCovid registry network (https://pregcovid.com/). In all, 141/1140 pregnant women were tested positive for SARS-CoV-2 resulting in a prevalence of 12.3% (Mean 9.4, 95% CI 6.6 – 12.1) in Maharashtra, India [Fig. 1A]. The prevalence of SARS-CoV-2 infection in women varied (0-40%) across the different hospitals in the state. For estimation of numbers of symptomatic and asymptomatic SARS-CoV-2 positive