

## CORRESPONDENCE

## Clinical Characteristics of Pregnant Women with Covid-19 in Wuhan, China

**TO THE EDITOR:** Despite the large and rapidly rising number of cases of coronavirus disease 2019 (Covid-19) and resulting deaths,<sup>1</sup> there are limited data about the clinical characteristics of pregnant women with the disease.<sup>2,3</sup> We extracted information regarding epidemiologic, clinical, laboratory, and radiologic characteristics, treatment, and outcomes of pregnant women with Covid-19 through the epidemic reporting system of the National Health Commission of China, which stores the medical records of all 50 designated hospitals in Wuhan city.

From December 8, 2019, to March 20, 2020, we identified 118 pregnant women with Covid-19 in Wuhan according to the criteria of the Chinese Clinical Guidance for Covid-19 Pneumonia Diagnosis and Treatment; 84 women (71%) had positive polymerase-chain-reaction (PCR) testing for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and the remaining 34 (29%) had suggestive findings on computed tomography (CT) of the chest. Criteria for mild, severe, and critical disease and other methodologic details are provided in the Supplementary Appendix, available with the full text of this letter at NEJM.org. The pregnant patients represented 0.24% of all reported patients with Covid-19 at these hospitals during this time.

The median age of the women was 31 years (interquartile range, 28 to 34); 55 of 106 (52%) were nulliparous, and 75 of 118 (64%) had been infected with SARS-CoV-2 in the third trimester. The most common symptoms in 112 women with available data were fever (in 75%) and cough (in 73%) (Table 1). Lymphopenia was present in 51 of 116 patients (44%). A total of 88 of the 111 women (79%) who underwent chest CT had infiltrates in both lungs. Additional clinical data are provided in the Supplementary Appendix.

A total of 109 of 118 women (92%) had mild disease, and 9 (8%) had severe disease (hypoxemia), 1 of whom received noninvasive mechanical ventilation (critical disease). Severe disease developed in 6 of the 9 women after delivery, and the woman who received noninvasive mechanical ventilation did so after delivery. As of March 20, a total of 109 of 116 women (94%) had been discharged, including all women with severe or critical disease. There were no deaths.

Among the study population, there were 3 spontaneous abortions, 2 ectopic pregnancies, and 4 induced abortions (all owing to patients' concerns about Covid-19). A total of 68 of 118 patients (58%) delivered during the study period, accounting for 0.56% of all deliveries in Wuhan during this time, and had 70 births (2 sets of twins). Of these 68 patients, 63 (93%) underwent a cesarean section; in 38 of 62 cases (61%), the procedure was performed because of concern about the effects of Covid-19 on the pregnancy. A total of 14 deliveries (21%) were premature; 8 were induced (7 owing to concern about Covid-19). No babies had neonatal asphyxia.

Testing for SARS-CoV-2 was performed on neonatal throat swabs of 8 newborns and breast-milk samples of 3 mothers. No positive results were reported.

The risk of severe disease in our pregnant population (8%) compared favorably with the risk reported in the general population of patients presenting with Covid-19 across mainland China (15.7%).<sup>4</sup> Previous data have shown lower rates of severe disease among women and younger patients than among men and older patients.<sup>4</sup> The present data do not suggest an increased risk of severe disease among pregnant women, as has been observed with influenza.<sup>5</sup> The exacerbations of respiratory disease that are observed in women

**Table 1. Demographic and Clinical Characteristics of Pregnant Women with Covid-19, According to Disease Severity.\***

Characteristic	All Patients (N=118)	Disease Severity	
		Nonsevere (N=109)	Severe (N=9)
<b>General characteristics</b>			
Median age (IQR) — yr	31 (28–34)	30 (28–34)	34 (33–35)
Nulliparous — no./total no. (%)	55/106 (52)	51/97 (53)	4/9 (44)
Parous — no./total no. (%)	51/106 (48)	46/97 (47)	5/9 (56)
<b>Signs and symptoms</b>			
Asymptomatic — no. (%)†	6 (5)	6 (6)	0
Symptomatic — no. (%)‡	112 (95)	103 (94)	9 (100)
Fever — no./total no. (%)	84/112 (75)	77/103 (75)	7/9 (78)
Cough — no./total no. (%)	82/112 (73)	73/103 (71)	9/9 (100)
Chest tightness — no./total no. (%)	20/112 (18)	15/103 (15)	5/9 (56)
Fatigue — no./total no. (%)	19/112 (17)	17/103 (17)	2/9 (22)
Dyspnea — no./total no. (%)	8/112 (7)	5/103 (5)	3/9 (33)
Diarrhea — no./total no. (%)	8/112 (7)	6/103 (6)	2/9 (22)
Headache — no./total no. (%)	7/112 (6)	5/103 (5)	2/9 (22)
<b>Pregnancy outcome</b>			
Delivery — no. (%)	68 (58)	61 (56)	7 (78)
Live birth — no./total no. (%)§	70/70 (100)	63/63 (100)	7/7 (100)
Preterm birth — no./total no. (%)	14/68 (21)	11/61 (18)	3/7 (43)
Iatrogenic	8/14 (57)	6/11 (55)	2/3 (67)
Abortion — no. (%)	9 (8)	9 (8)	0
Spontaneous abortion — no./total no. (%)	3/9 (33)	3/9 (33)	0
Induced abortion — no./total no. (%)¶	4/9 (44)	4/9 (44)	0
Ectopic pregnancy — no./total no. (%)	2/9 (22)	2/9 (22)	0
Cesarean section — no./total no. (%)	63/68 (93)	58/61 (95)	5/7 (71)
Due to obstetrical indications	24/62 (39)	22/57 (39)	2/5 (40)
Due to concern about Covid-19	38/62 (61)	35/57 (61)	3/5 (60)
Natural delivery — no./total no. (%)	5/68 (7)	3/61 (5)	2/7 (29)
Pregnancy ongoing — no. (%)	41 (35)	39 (36)	2 (22)
Median 1-min Apgar score (IQR)**	9 (8–9)	9 (8–9)	8 (8–10)
Neonatal asphyxia — no./total no.	0/70	0/63	0/7
Neonatal death — no./total no.	0/70	0/63	0/7

\* The denominators of patients who were included in each analysis are provided if they differed from the total numbers in the relevant study group. Percentages may not total 100 because of rounding. Covid-19 denotes coronavirus disease 2019, and IQR interquartile range.

† Asymptomatic patients were screened because of exposure to persons with confirmed or suspected Covid-19.

‡ The signs and symptoms listed include those reported to occur before admission and during hospitalization. Data were extracted from the medical record and may not reflect complete accounting of symptoms.

§ The reason that there were 70 live births but 68 deliveries was that there were 2 sets of twins.

¶ These abortions were induced because of the patient's concern about Covid-19.

|| The data shown are as of March 20, 2020.

\*\* The Apgar score at 1 minute was available for 66 babies.

during the postpartum period are likely to relate to pathophysiological changes (e.g., increased circulating blood volume) that occur in this period.

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