

Covid-19 and Pregnancy

高雄長庚婦產部 2020.04

Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: a retrospective, single-centre, descriptive study



Nan Yu, Wei Li*, Qingling Kang, Zhi Xiong, Shaoshuai Wang, Xingguang Lin, Yanyan Liu, Juan Xiao, Haiyi Liu, Dongrui Deng, Suhua Chen, Wanjiang Zeng, Ling Feng, Jianli Wu*

Background

- In December, 2019, coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan, China.
- The number of affected pregnant women is increasing, but scarce information is available about the clinical features of COVID-19 in pregnancy.
- This study aimed to clarify the **clinical features and obstetric and neonatal outcomes of pregnant patients** with COVID-19.

Methods

- In this retrospective, single-centre study, we included all pregnant women with COVID-19 who were admitted to Tongji Hospital in Wuhan, China. **Clinical features, treatments, and maternal and fetal outcomes** were assessed.

Results

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7
Age, years	34	30	31	33	29	34	34
Gravida (parity)	2 (0)	2 (0)	2 (1)	5 (1)	1 (0)	2 (1)	2 (1)
Gestational age at admission, weeks + days	39+6	38+5	41+2	37	40+4	38+2	38+4
Exposure to Huanan seafood market	No	No	No	No	No	No	No
Contact history of epidemic area	Yes	Yes	Yes	Yes	Yes	Yes	Yes
History of chronic basic diseases	Hypothyroidism	Polycystic ovary syndrome	No	No	No	No	No
Pregnancy complications	No	No	No	Uterine scarring	No	Uterine scarring	Uterine scarring
Clinical manifestations of obstetrics	Abdominal pain (labour)	No	Abdominal pain (premonitory labour)	Increased fetal movement	Abdominal pain (premonitory labour)	Abdominal pain (premonitory labour)	No
Pneumonia-related manifestations							
Fever (days)	Yes (3)	Yes (4)	Yes (14)	No	Yes (3)	Yes (4)	Yes (8)
Cough	No	No	No	Yes	No	No	No
Shortness of breath	No	Yes	No	No	No	No	No
Diarrhoea	No	No	Yes	No	No	No	No
Incubation period, days	5	7	4	2	9	5	3

Table 1: Maternal characteristics of seven patients with COVID-19

- Mean gestational age: 39 1/7 weeks (range 37 - 41 weeks plus 2 days).
- Clinical manifestations were fever (six [86%] patients), cough (one [14%] patient), shortness of breath (one [14%] patient), and diarrhea (one [14%] patient).
- All the patients had C/S within 3 days of clinical presentation with an average gestational age of 39 2/7 weeks.

Results

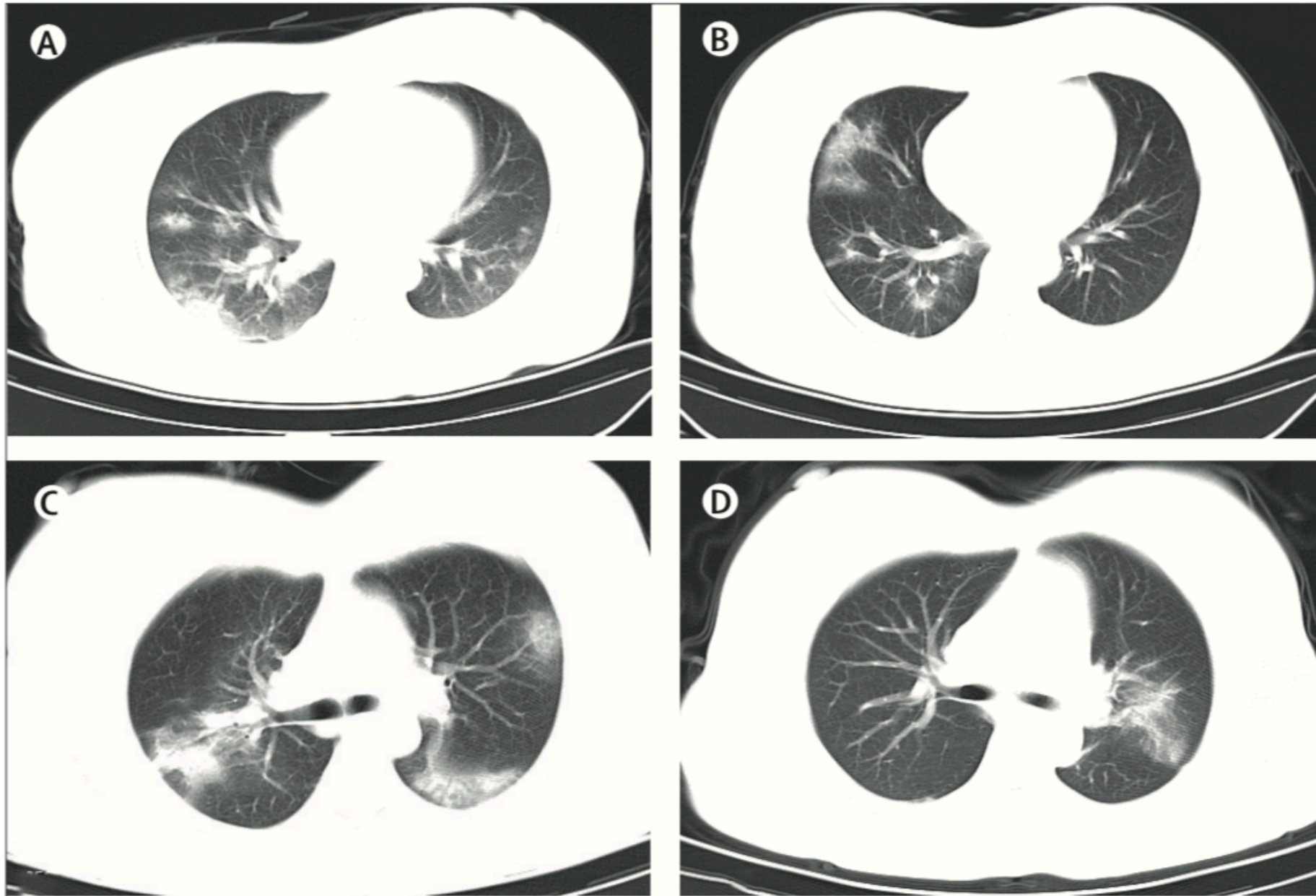


Figure: Chest CT of four patients

Patient 1 (A), patient 3 (B), patient 4 (C), and patient 6 (D). The brightness of both lungs is diffusely decreased, showing a large area of multiple ground-glass opacities or patchy shadow with an uneven density.

Results

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7
Pregnancy outcome	Discharged	Discharged	Discharged	Discharged	Discharged	Discharged	Discharged
Neonatal outcome	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Birthweight, g	3250	3350	3200	3000	3500	3300	3250
Apgar score (1 min)	8-9	8-9	8-9	8-9	8-9	8-9	8-9
Apgar score (5 min)	9-10	9-10	9-10	9-10	9-10	9-10	9-10
Admission to neonatology department	Yes	No	Yes	No	No	No	Yes
Nucleic acid test of SARS-CoV-2	Positive (36 h)	Not tested	Negative	Not tested	Not tested	Not tested	Negative
Days of follow-up	40	28	28	28	28	28	28
Neonatal complications	No	No	No	No	No	No	No

None of the women were admitted to intensive care. Normal=no respiratory symptoms or fever or neonatal complications, such as neonatal respiratory distress syndrome, feeding abnormalities, or abnormal growth or development. SARS-CoV-2=severe acute respiratory syndrome coronavirus 2.

Table 2: Maternal and neonatal outcomes of seven patients with COVID-19

- The final date of follow-up was Feb 12, 2020. The outcomes of the pregnant women and neonates were good.
- Three neonates were tested for SARS-CoV-2 and one neonate was infected with SARS-CoV-2 36 h after birth.

Discussion

- Human coronaviruses are among the most common pathogens that cause respiratory infection. SARS-CoV-2 has enveloped virions that measure about 50–200 nm in diameter with a single positive-sense RNA genome.
- COVID-19 is transmitted through **respiratory droplets, physical contact, and aerosols**, and there is evidence of **human-to-human** transmission

Discussion

- Common symptoms of these pregnant women at the onset of COVID-19 were **fever and cough**, and the less common symptoms were diarrhoea and shortness of breath.
- Laboratory tests showed that absolute **lymphocyte counts were reduced, C-reactive protein, erythrocyte sedimentation rate, and D-dimer were increased**, and leucocytes were normal in most of the seven pregnant patients.
- Patients showed a pattern of clinical characteristics **similar** to those reported in non-pregnant adults with COVID-19.

Treatment

- In our study, most patients were treated with **ribavirin, corticosteroids, and antibiotics.**
- No safety concerns have been identified related to the use of traditional Chinese medicine in our study.

Remdesivir

- Although remdesivir and other antiviral drugs have been used in the clinical treatment of patients with COVID-19, **no data of their safety and efficacy** as COVID-19 treatments have been published.

Steroid

- In animal studies, large doses of corticosteroids during pregnancy might lead to fetal malformation
- The easy passage of corticosteroids through the placenta might increase the incidence of **low birthweight** in infants.
- Therefore, steroids were only used after caesarean section in this study.
- Thus far, **no complications** related to the steroids have been recorded in the mothers and infants,

Antibiotics

- Timely use of antibiotics to prevent secondary bacterial infections and strengthen immune support treatment can reduce complications and mortality, so antibiotics were used **routinely after operation**

Timing of delivery

- Deliver **as soon as possible** might be a better choice for the sake of safety considerations.

SARS and SARS-CoV-2 Mortality in pregnancy

- The sequence similarity between SARS and SARS-CoV-2 is as high as 79%
- The mortality rate of **SARS** infection is 10%, and the mortality rate of SARS in pregnant women was 25%.
- Studies have reported that the mortality rate of patients with **COVID-19** is about 1.4%.
- In our study, the maternal, fetal, and neonatal outcomes of pregnant women with COVID-19 pneumonia are **better** than those with SARS infection.

Vertical transmission

- Previous studies have shown no evidence of perinatal SARS infection in infants born to mothers who had SARS infection during pregnancy.
- One neonate in our study was infected with COVID-19 36 h after birth. However, the viral nucleic acid tests of the **placenta and cord blood** in this patient were **negative** for SARS-CoV-2
- **Intrauterine vertical transmission might not have occurred**

Outcome

- Clinical characteristics of these patients with COVID-19 during late pregnancy are **similar** to those reported by non-pregnant adults with COVID-19.
- The maternal, fetal, and neonatal outcomes of those pregnant women infected in late pregnancy appear very good.
- Long-term outcomes and potential mother-to-child vertical transmission needs further study.

Limitation

- More infected pregnant women and comparative studies (eg, cohorts, case-control) should be analysed to get a more comprehensive understanding of COVID-19 in pregnancy.
- All enrolled patients were in the third trimester, so the effect of the virus infection on the fetus in the **first or second trimester** is unknown.
- Due to the short time of the outbreak, the long-term outcomes of the neonates and whether mother-to-child transmission exists require further study.

Conclusion

- The maternal, fetal, and neonatal outcomes of patients who were infected in **late pregnancy** appeared very good, and these outcomes were achieved with intensive, active management that might be the best practice in the absence of more robust data.
- The clinical characteristics of these patients with COVID-19 during pregnancy were **similar** to those of non-pregnant adults with COVID-19 that have been reported in the literature.

補充資料

孕婦如果得了COVID-19

1. 是否會提高併發機率及死亡率？
2. 是否會垂直感染？
3. 選擇剖腹產or自然產？
4. 產後是否可以接觸寶寶及哺餵母乳？
5. 對新生兒預後的影響？

AJOG 建議

- 多團隊合作
- 密切監測胎兒心跳及孕婦宮縮情形
- Early oxygen, early mechanical ventilation
- 給予經驗性抗生素

1. 是否會提高併發機率及死亡率？

- 統計發表的兩篇病例中：孕婦共18人，新生兒共19人，病程表現與未懷孕患者類似。

Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records



Huijun Chen, Juanjuan Guo*, Chen Wang*, Fan Luo, Xuechen Yu, Wei Zhang, Jiafu Li, Dongchi Zhao, Dan Xu, Qing Gong, Jing Liao, Huixia Yang, Wei Hou, Yuanzhen Zhang*

Original Article



Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia

Huaping Zhu^{1#}, Lin Wang^{2#}, Chengzhi Fang^{3#}, Sicong Peng¹, Lianhong Zhang⁴, Guiping Chang⁵, Shiwen Xia¹, Wenhao Zhou⁶

2. 是否會垂直感染？

- 目前沒有證據
- 在感染的孕婦中，胎盤、羊水檢測皆無病毒存在

Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. Lancet 2020; DOI: 10.1016/S0140-6736(20)30360-3. Available at: <http://www.sciencedirect.com/science/article/pii/S0140673620303603>. Retrieved Feb 21, 2020.

3. 選擇剖腹產or自然產？

- 在發表的18個病例中，有16個為剖腹產，2個為自然產

	CS原因	人數	合計
CS	肺炎	9	16
	前置胎盤	1	
	未記錄原因	6	
NSD	-		2

婦產科醫學會:除可迅速順利經陰道生產外，應以剖腹產為優先

4. 產後是否可以接觸寶寶及哺餵母乳？

- 母乳未檢測出病毒
- 目前case report 發表皆為接觸感染

5. 對新生兒預後的影響？

- 在懷孕過程中可能會發生胎兒窘迫或是早產情形
- 新生兒可能出現respiratory distress, thrombocytopenia accompanied by abnormal liver function, 甚至死亡

Zhu H, Wang L, Fang C, Peng S, Zhang L, Chang G, et al. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. *Transl Pediatr* 2020;9:51–60. Available at: <http://tp.amegroups.com/article/view/35919/28274>. Retrieved February 21, 2020.