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

Anesthesia and infection control in cesarean section of pregnant women with COVID-19 infection: A descriptive study

To the editor

From January 24 to March 15, 2020, there were 3294 pregnant women who had vaginal or operative deliveries in the Maternal and Children Health Hospital of Hubei Province in Wuhan, China, of whom 110 with suspected and confirmed COVID-19 infection. Given an increasing number of pregnant women, COVID-19 infection has been as one indication for cesarean section since 24 January 2020 in our hospital.

Anesthesiologists had a high exposure risk to SARS-CoV-2 when conducting cesarean section for pregnant women with COVID-19. In response, we upgraded infection prevention and control (IPC) practice to the highest level according to the national guideline [1]. One negative pressure operating room was dedicated to all operations on pregnant women with confirmed COVID-19 pneumonia. Pregnant women with confirmed and suspected COVID-19 were required to wear a surgical mask upon arrival to operation room during surgery. They were moved to isolation wards immediately after surgery. Some newborns stayed in neonatal wards and others were sent home to be taken care by family members.

Here we reported the safety and efficacy of the combined spinal-epidural anesthesia (CSEA) and infection control measures on perinatal care quality of 14 pregnant women with confirmed COVID-19 infection. The ethical approval has been obtained from the Ethics Committee of the Hubei Provincial Maternal and Child Health Center [2020-IEC-LW011]. The requirement for written informed consent was waived by the Ethics Committee since the data were encrypted.

We followed a standard protocol of the CSEA procedure in our hospital. Intraspinal anesthesia (0.5% ropivacaine at 10–15 mg) was administered using pencil-point spinal needles at L2–3. An epidural catheter was inserted toward the head as a rescue pathway during operation and also for postoperative analgesia. For postoperative analgesia, dezocine (5 mg/ml) at 5–10 mg was immediately administered by intravenous infusion after delivery, combined with morphine (0.2 mg/ml) at 2 mg injected via epidural catheter at the end of cesarean section. Dezocine is an opioid kappa-receptor antagonist and a mu-receptor partial agonist, which has been widely used in postoperative analgesia in China and other Asian countries [2,3].

Anesthesia results of fourteen patients with confirmed COVID-19 infection are summarized in Table 1. Most patients had sensory blockade levels above T5 and Bromage scale of 3 during operation. The mean duration of puncture and surgery was 3.7 and 39.4 min respectively. The vital signs of patients remained stable during the surgery. The patients achieved satisfactory visual analogue scale (VAS) and Bruggmann Comfort Scale scores (BCS). Some minor complications were reported in these patients, including itchiness, postoperative vomit and nausea, pain at puncture site. None of the patients reported the incidence of severe obstetric complications related to anesthesia and surgeries.

We previously reported that COVID-19 infection caused relatively mild symptoms in pregnant women, who rarely had hypoxia or respiratory failure. The maternal and neonatal outcomes were also comparable to other pregnant women without infection [4]. Another study in Wuhan reported that 12 out of 14 pregnant women experienced hypotension during the cesarean section under epidural anesthesia [5]. However, very few incidences of hypotension had occurred in our patients (zero in confirmed cases, and 4 out of 16 in suspected ones). This could be owing to administration of dezocine and morphine in our anesthesia procedure, but it requires further investigations from more studies.

In cesarean section for pregnant women with COVID-19 infection,

Table 1
Anesthesia evaluations in patients with confirmed COVID-19 infection.

	Confirmed cases (n = 14)
ASA score I/II, n (%)	14 (100%)
Dosage of ropivacaine, mean ± SD (mg)	12.0 ± 0.8
Duration of puncture, mean ± SD (min)	3.7 ± 1.5
Sensory blockade level, 10 min after anesthesia, n (%)	
T4	5 (35.7%)
T5	5 (35.7%)
T6	4 (28.6%)
T7	0 (0.0%)
Modified Bromage scale, 10 min after anesthesia, n (%)	
2	4 (28.6%)
3	10 (71.4%)
Sensory blockade level, immediate after surgery, n (%)	
T4	1 (7.1%)
T5	7 (50.0%)
T6	5 (35.7%)
T7	1 (7.1%)
T8	0 (0.0%)
Modified Bromage scale, immediate after surgery, n (%)	
3	12 (85.7%)
Intraoperative hypotension, n (%)[a]	0 (0.0%)
Intraoperative sedation, n (%)	0 (0.0%)
Airway management during operation	0 (0.0%)
Dosage of atropine, mean ± SD (mg)	0 ± 0
Dosage of ephedrine, mean ± SD (mg)	0 ± 0
Grade of anesthesia effect, n (%)	
1	11 (78.6%)
2	3 (21.4%)

[a] Hypotension defined as systolic blood pressure < 80 mmHg or ≥30% decrease relative to baseline blood pressure.

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CSEA was safe and efficient in achieving satisfactory obstetrical anesthesia and could also assist administration of dezocine and morphine for postoperative analgesia. No adverse events associated with anesthesia and surgery were found in these patients, and no cross-infection occurred in the HCWs working in these operations while wearing a full set of personal protective equipment.

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Authors' contributions

L Yue conceived the study and collected the data; LH analyzed the data, and drafted the manuscript; QL, MZ, JW, ZW, CC, YZ helped collect the original data and review the final manuscript; MP contributed to drafting the paper; L Yang and NL revised the manuscript; All the authors reviewed and approved the final manuscript.

Declaration of competing interest

The authors report no potential conflicts of interest.

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