



## Spinal anesthesia for Cesarean delivery in women with COVID-19 infection: questions regarding the cause of hypotension

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the French Obstetric Anesthesia Working Group (Club Anesthésie-Réanimation en Obstétrique [CARO])

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### To the Editor,

We read with interest the study by Chen et al.,<sup>1</sup> which describes a series of 17 patients with coronavirus disease (COVID-19) who underwent Cesarean delivery within a three-week period in a single maternity unit. Their experience is of utmost importance as the disease has spread worldwide and many countries will face (or already have faced) this situation in pregnant women. Anesthesiologists are frontline healthcare workers in cases of Cesarean delivery, so we would be very happy to have more information from this Chinese group.

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This letter is accompanied by a reply. Please see Can J Anesth 2020; this issue.

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In their article, the authors state that they used combined-spinal anesthesia (CSE) technique but it seems that only the epidural details are reported. If the spinal component of the CSE was used in some patients, the high incidence of hypotension would be less surprising as hypotension is much more likely to occur with spinal anesthesia during Cesarean delivery.<sup>2</sup> If this were the case, the drug and the dose used for the spinal component would be interesting to know. If the authors used only epidural anesthesia (which is nowadays a less common choice for scheduled cases), and if only three patients had emergency Cesarean delivery, then the high incidence of hypotension is more concerning. Neuraxial anesthesia used during emergency Cesarean delivery (i.e., considering that women are most often in labour) is associated with a reduced incidence of hypotension<sup>3</sup> and this has been attributed to labour-induced increases in cardiac output. In other words, more details would be useful to better interpret these results.

Details on the maternal hypotension observed would also be useful. Indeed, it is not stated if the hypotension was of long duration and/or if severe hypotension had occurred. Their Table 4 suggests that the hypotension was of very short duration and not severe, as the umbilical artery (UA) pH was not low and the UA partial pressure of carbon dioxide was not high. Drugs used to prevent and manage hypotension were also not described. Significant differences exist between available vasopressors such as ephedrine, phenylephrine, and norepinephrine regarding their mechanism of action (i.e., direct/indirect and beta-to-alpha adrenergic agonist ratios). It would also have been interesting to know if hypotension was associated with other adverse events such as nausea or vomiting, often linked to the severity of hypotension.

An additional question relates to the mode of anesthesia used in the emergency Cesarean delivery (i.e., category 1 or “code red”). In the present series, three parturients underwent emergency Cesarean delivery because of fetal distress. Because of the time needed for donning personal protection equipment (PPE) (and potentially entering several consecutive rooms), injecting an additional dose in the epidural catheter previously placed for labour analgesia early enough to obtain adequate surgical anesthesia becomes unlikely. This would increase the risk of inadequate anesthesia during incision and this might necessitate the conversion to general anesthesia in less than optimal conditions.<sup>4</sup> It seems that the authors may have experienced such a situation in that all three emergency Cesarean deliveries were performed with general anesthesia alone. Alternatively, choosing to bypass the use of PPE could be associated with healthcare worker contamination.<sup>5</sup>

French anesthesia teams are also being confronted with an increasing number of COVID-19 pregnant women requiring delivery and we would benefit from this additional information.

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