The use of vasopressors during anaesthesia for caesarean section: a retrospective observational study

Henrique Guimarães[1], André Pombo[1], Ana Araújo[1,2], Catarina Nunes[1,3], Hermínia Cabido[1], Paulo Lemos[1]

1- Department of Anesthesiology, Centro Hospitalar Universitário do Porto, Porto, Portugal
2- Department of Biomedicine, Unit of Pharmacology and Therapeutics, Faculty of Medicine, University of Porto, Porto, Portugal
3- Universidade Aberta, Department of Science and Technology, Porto, Portugal

Background and aims: Vasopressors are commonly used during cesarean section due to the vasoplegia caused by the different anesthesia techniques. A vasopressor with predominantly α-agonist activity such as phenylephrine was recently recommended as a consensus choice. However, the optimal choice of vasopressor is still unclear regarding the concerns about reflex bradycardia and decreased cardiac output associated with phenylephrine. The present work aimed to study predictor factors of vasopressors usage during anesthesia for caesarean section.

Methods: A retrospective, observational study on pregnant patients submitted to caesarean sections from January 2021 to December 2021 was carried out. Demographics, medical comorbidities, caesarean type, APGAR scores and vasopressor usage during surgery were transcribed from electronic patient records. Linear and logistic regressions were applied for data analysis and a p-value < 0.05 was considered statistically significant.

Results: The study sample consists of 761 patients who underwent caesarean section and complete anesthetic records were available. Vasopressors were required in 45.7% of patients. Ephedrine was more used than phenylephrine (24.6 versus 16.8%) and both drugs were needed in 4.3% of patients. Vasopressors were more frequently used in patients who underwent sequential combined spinal epidural or spinal anesthesia ($p<0.001$) and the median APGAR scores in the 1st and 5th minutes were lower when vasopressors were not administered ($p<0.001$). The predictor importance model of the vasopressor uses during cesarean section showed, with an accuracy of 27.2%, that the anesthetic technique was the only variable independently associated with the vasopressor use.

Discussion and conclusion: Our analysis suggests that lower APGAR scores are not correlated with the use of ephedrine or phenylephrine. This is consistent with the observations that duration of hypotension may be more important than its severity. Additionally, this may suggest that the biochemical changes in umbilical cord previously reported with the use of ephedrine, are not associated with clinical differences in neonatal outcomes. Our study does not identify any individual predictor that is associated with an increased risk of use of vasopressors during caesarean section as well. Pregnant women should be assessed in an individual basis and future research focusing on methods of predicting hypotension is necessary.

KEY WORDS: caesarean section; phenylephrine; ephedrine; obstetrics; hypotension