

PDF hosted at the Radboud Repository of the Radboud University Nijmegen

The following full text is a publisher's version.

For additional information about this publication click this link.

<http://hdl.handle.net/2066/175658>

Please be advised that this information was generated on 2019-12-09 and may be subject to change.

Spinal anesthesia: the Holy Grail?

Marieke Voet
Cornelis Slagt

Department of Anesthesiology,
Pain and Palliative Care, Radboud
University Medical Center, Nijmegen,
The Netherlands

Dear editor

After reading the paper recently published in *Local and Regional Anesthesia* by Whitaker et al:¹ “Spinal anesthesia after intraoperative cardiac arrest during general anesthesia in an infant,” we would like to share our thoughts. In a recently published paper by Habre et al,² the incidence of severe critical events in pediatric anesthesia was investigated. In 261 hospitals across Europe (33 countries), severe critical events were registered. In total, 31,127 anesthetic procedures in 30,874 children were included. Age, medical history, and physical condition were the major risk factors for a serious critical event. In total, 1,478 patients had a critical event, most of them during or immediately after anesthesia. Children younger than 3 years of age are at risk for critical events.

A serious cardiac event in a healthy child is rare during anesthesia and almost always related to hypoxia. In the case of an acute decline in end-tidal CO₂ and cardiovascular collapse during laparoscopic surgery, the possibility of a CO₂ embolus should be considered. Although rare, several case reports about CO₂ embolism after laparoscopic procedures in infants and children have been published.³ Most reports describe an uneventful recovery, probably due to the high solubility and quick reabsorbance of the CO₂ embolus once trapped in the pulmonary vasculature. This explains the often prompt recovery of vital signs. Also, changes in oxygen saturation will occur after the cardiovascular collapse, as was described in this case.

Insufficient anesthetic depth with a severe vagal response remains another option of primary cardiovascular collapse without a preceding hypoxic event. Using the normograph suggested by Lerou the total MAC was only 0.48, suggesting that insufficient anesthetic depth could also have contributed to this event.⁴ Vagal stimulation could also have occurred during the first episode when the tube migrated to the right main bronchus with possible irritation of the carina.

Although spinal anesthesia can be a good alternative to general anesthesia, it is usually reserved for neonates and infants. At this age, children fall asleep after spinal anesthesia because of the lack of sensory input. At older age, this advantage disappears, and additional sedation is usually necessary. The choice of using spinal anesthesia to prevent general anesthesia, which allegedly leads to the cardiac collapse without an underlying cause, is controversial.⁵ The combination of spinal anesthesia with sedation could lead to hemodynamic instability and/or loss of airway patency. As this was

Correspondence: C Slagt
Department of Anesthesiology, Pain
and Palliative Care, Radboud University
Medical Center, Geert Grooteplein-Zuid
10, PO Box: 9101, 6500 HB Nijmegen,
The Netherlands
Tel +31 24 361 4406
Email Cor.Slagt@radboudumc.nl

not the case during the second operation, we could state that anesthetic “depth” met the surgical stimulus. Spinal anesthesia was not the Holy Grail, but a better anesthetic.

Disclosure

The authors report no conflicts of interest in this communication.

References

1. Whitaker EE, Miler V, Bryant J, Proicou S, Jayanthi R, Tobias JD. Spinal anesthesia after intraoperative cardiac arrest during general anesthesia in an infant. *Local Reg Anesth.* 2017;10:25–29.
2. Habre W, Disma N, Virag K, et al; APRICOT Group of the European Society of Anaesthesiology Clinical Trial Network. Incidence of severe critical events in paediatric anaesthesia (APRICOT): a prospective multicentre observational study in 261 hospitals in Europe. *Lancet Respir Med.* 2017;5(5):412–425.
3. Lerou JG. Nomogram to estimate age-related MAC. *Br J Anaesth.* 2004;93(2):288–291.
4. Kudsi OY, Jones SA, Brenn BR. Carbon dioxide embolism in a 3-week-old neonate during laparoscopic pyloromyotomy: a case report. *J Pediatr Surg.* 2009;44:842–845.
5. Davidson AJ, Disma N, de Graaff JC, et al. Neurodevelopmental outcome at 2 years of age after general anaesthesia and awake-regional anaesthesia in infancy (GAS): an international multicentre, randomised controlled trial. *Lancet.* 2016;387:239–250.

Dove Medical Press encourages responsible, free and frank academic debate. The content of the Advances in Medical Education and Practice ‘letters to the editor’ section does not necessarily represent the views of Dove Medical Press, its officers, agents, employees, related entities or the Advances in Medical Education and Practice editors. While all reasonable steps have been taken to confirm the content of each letter, Dove Medical Press accepts no liability in respect of the content of any letter, nor is it responsible for the content and accuracy of any letter to the editor.

Local and Regional Anesthesia

Publish your work in this journal

Local and Regional Anesthesia is an international, peer-reviewed, open access journal publishing on the development, pharmacology, delivery and targeting and clinical use of local and regional anesthetics and analgesics. The journal is included in PubMed, and welcomes submitted papers covering original research, basic science, clinical studies,

reviews and evaluations, guidelines, expert opinion and commentary, case reports and extended reports. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/> testimonials.php to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/local-and-regional-anesthesia-journal>

Dovepress