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LETTER

Spinal anesthesia: the Holy Grail?

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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 CO_2 and cardiovascular collapse during laparoscopic surgery, the possibility of a CO_2 embolus should be considered. Although rare, several case reports about CO_2 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 CO_2 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

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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.

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