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Enhanced recovery after surgery: Many ways for the same destination

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Dear Editor

We would thank Noamaan and his colleagues for their valuables comments about the work published by our multidisciplinary team.

Concerning the first point, to our knowledge there is no "formalized recommendation" about the optimal blood-sparing strategies in children. The reference cited by authors and termed "recommendation" is a retrospective study including 86 patients (1). This study found that a rationalized use of erythropoietin can be considered as valuable local blood-saving strategy. I do rather call it a "local recommendation" given the monocentric nature of the study, the great variability in blood loss during adolescent scoliosis surgery (ASC) depending on the surgical technique and skill of surgeons. Given the teaching nature of our center, the various skill of surgeons, and the published results of our local blood-saving strategy (a prospective study including 147 patients)(2), we decided to administer EPO to all patients. The conclusion from this discussion is the lack of evidence about the most appropriate strategy for using EPO during ASC.

We totally agree with the comment concerning motor evoqued potentiels (MEPs) and the effect of volatile anesthetics on their interpretation. However, using the Bispectral monitoring, minimal alveolar concentration of sevoflurane usually used is ranging between 0.6 and 0.8 which limit effects of this volatile agent on MEPs. In addition, muscle relaxant is used at doses associated with a depression of one twitch on the train-of-four monitoring. Finally, the neuromonitoring in our center is associating MEPs, somatosensory evoqued potentials (SEPs) that are less depressed by volatiles agents(3). Although, we agree with authors about the advantage of propofol in this situation, we have some concern about remifentanil. Enhanced recovery after surgery (ERAS) relies on decreasing opioid use and their side effect, remifentanil appears as the worst choice in this setting. Studies have found both in adults (4) and children (5) (especially during spine surgery) high infusion rates of this agent may induce hyperalgesia with an increased use of morphine during the postoperative period.

Some patients in the ERAS group did not receive the dexmedetomine-ketamine association and were given the standard anesthesia regiment (volatile agent and sufentanil). Some patients received dexmedetomidine in the control group. However, the purpose of the study was not to investigate the intraoperative anesthesia technique but the whole perioperative ERAS strategy. This is highly supported by results of the multivariable quantile regression in the original article (6) that found many factors (table 1: other than simply the intraoperative anesthesia technique) were associated with a reduction in length of hospital stay.

Concerning ketamine, a recent meta-analysis has found no effect of this agent on

postoperative opioid consumption and consequently no anti-hyperalgesic effect in children (7). Moreover, among included studies 3 were randomized controlled ones during scoliosis surgery and no evidence of an opioid-sparing effect of ketamine was found in any study even for longer postoperative administration (72 hours). Consequently, this agent should not be used for the purpose of decreasing hyperalgesia but rather as an intraoperative analgesic agent in children (as used in our study). In this regard, ketamine should be considered as the perfect illustration of the pediatrician adage "children are not little adults".

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