

Perioperative use of intravenous lidocaine



Abstract

Background

In order to provide the patient with adequate perioperative comfort, multimodal analgesic treatment is necessary. The main objectives of the project were evaluating the influence of perioperative intravenous lidocaine infusion on postoperative morphine requirements and the recovery profile of children undergoing extensive spinal surgery. Additional purposes were to assess the quality of life of children during the postoperative period and to compare it with preoperative values, to determine the frequency of chronic postoperative pain, and to assess the safety of lidocaine use.

Materials and Methods

Prospective, randomized, double-blind study: 41 children qualified to multilevel spinal surgery were randomized to the lidocaine group with IV lidocaine infusion (bolus 1.5 mg/kg/30min followed by 1mg/kg/h to 6 hours after surgery) and the control group with placebo. The protocol of perioperative management was identical for all patients. Measurements: the end-tidal sevoflurane concentration required to maintain a bispectral index BIS between 40 and 60; an intraoperative blood pressure, a heart rate; a postoperative level of patients' sedation assessed using the Richmond Agitation-Sedation Scale, intensity of postoperative pain (the Numerical Rating Scale), morphine requirements, oral feeding initiation time, first attempts at assuming erect position and postoperative quality of life and incidence of chronic postsurgical pain on (the Acute Short-form /SF-12/ health survey).

Results

Lidocaine has been shown to reduce the requirement for morphine, accelerate restoring normal gastrointestinal function and allow earlier rehabilitation. Patients receiving intravenous lidocaine infusion had significantly lower volatile anesthetics requirements. The relationship between lidocaine supply and the time of hospitalization and the postoperative quality of life of patients has not been proven. It has been observed that chronic postoperative pain can be a serious problem in the long term after extensive spine surgery in children. It was also determined at what doses the therapeutic concentration of lidocaine in the blood of examined children is achieved. The safety of lidocaine has been proven.

Conclusions

Lidocaine, as an element of a multimodal analgesic therapy, implemented in the perioperative protocol for the management of extensive surgical procedures in the spinal area of children, is a promising drug demonstrating analgesic effectiveness and safety of use. The study extends knowledge about the proper treatment of acute pain in children, and in the long term may contribute to the development of more effective methods of alleviating severe perioperative pain and preventing the development of chronic pain in pediatric patients.

Ilona Batko

University Children's Hospital, Cracow

Biography

Ilona Batko is a specialist in anesthesiology and intensive care. Currently, she works at the University Children's Hospital in Cracow, Poland. Her interests and responsibilities include anaesthesiological care for pediatric patients undergoing highly specialized surgical procedures, diagnosis and treatment of children in the intensive care unit and treatment of acute and chronic pain. She is particularly close to the topic of pain management, especially the treatment of acute pain in children. To deepen her knowledge in this subject, she completed post-graduate studies in "Pain Medicine" at the Jagiellonian University in Cracow. In 2020 she earned her PhD in medicine. In PhD project entitled "Perioperative use of intravenous lidocaine in children undergoing extensive spinal surgeries" she evaluated the influence of intravenous lidocaine infusion on postoperative opioid demand and recovery profile in children. Observations from this study could provide new trends in the treatment of acute pain in children. She is passionate about the regional analgesia, the methods of which she actively implements in her daily medical practice. She is the author and co-author of several medical articles devoted to the treatment of acute pain in children, published in international scientific journals indexed in the PubMed database and included in the Journal Citation Reports list (Thomson Reuters). She shares her knowledge about pain management in children by training medical students and doctors.

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