

lek. Maciej Kaszyński

Tytuł: Analgeza multimodalna u dzieci

**Rozprawa na stopień doktora nauk medycznych i nauk o zdrowiu
w dyscyplinie nauki medyczne**

Promotor: dr hab. n. med. Izabela Pągowska-Klimek

Klinika Anestezjologii i Intensywnej Terapii Dziecięcej

Kierownik Kliniki: dr hab. n. med. Izabela Pągowska-Klimek



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III. Streszczenie w języku angielskim

Multimodal analgesia in children

Ineffective pain management may be a cause of severe postoperative complications. In the pediatric population, the risk of receiving inadequate analgesia is higher. The history of pediatric pain medicine is relatively short, hence the available data from credible sources is scarce. Due to a lack of high-quality randomized controlled trials, current pain management guidelines for children are clinical practice advisory based on expert consensus.

Multimodal analgesia is defined as the use of a variety of analgesic medications and techniques that target different mechanisms of action in the peripheral and/or central nervous system. This approach includes pharmacologic and non-pharmacologic modalities acting synergistically to achieve more effective pain control with fewer side effects than a single analgesic modality. Current guidelines universally support the use of multimodal therapy, with a special emphasis on regional anesthesia techniques, which should be used whenever possible.

The World Health Organization (WHO) analgesic ladder is a strategy proposed in 1986 as a systematic approach aimed to provide adequate pain relief in cancer patients. Today, it is applied to a broader group of individuals, including those who suffer from acute postoperative pain. The approach helps adjust the set of medications to the intensity of pain sensation. The use of adjuvants is recommended at each step of the analgesic ladder.

Adjuvants, also known as co-analgesics, are a large group of drugs belonging to different classes, such as antidepressants, anticonvulsants, corticosteroids, bisphosphonates, cannabinoids, and others. They enhance or prolong the effect of opioid and non-opioid analgesics. Lidocaine is an adjuvant recommended in adults undergoing open and laparoscopic abdominal surgery. Intraoperative intravenous lidocaine infusion is associated with reduced opioid requirements, lower incidence of postoperative nausea and vomiting, faster return of bowel function, and shorter length of hospital stay. Guidelines for children do not address the practicality and safety of lidocaine application as part of multimodal analgesia. The formulations available in Poland are not registered for this indication in children.

The present dissertation consists of a series of three publications dedicated to multimodal analgesia in children. Two case reports describe the use of multimodal strategies for acute postoperative pain management, including an evaluation of its efficiency and safety.

The third publication is a report from a randomized controlled trial which studied certain aspects of intravenous lidocaine infusions as part of a multimodal strategy.