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Letter to the Editor

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Emerging advances in the utility of gabapentinoids for postoperative pain management

Çiğdem Yalçın*

Department of Algology, Mersin City Training and Research Hospital, Mersin, Turkiye

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***Corresponding Author:** Çiğdem Yalçın, mdcigdem@gmail.com

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Dear Editor,

Gabapentinoids have become increasingly integrated into multimodal perioperative analgesia, driven by evidence suggesting their ability to attenuate central sensitization, reduce postoperative hyperalgesia and limit opioid use. However, despite their widespread application in adults, the role of gabapentinoids in pediatric perioperative pain management remains insufficiently defined. This letter aims to summarize recent developments and persisting uncertainties regarding gabapentinoid use in children.

Although the U.S. Food and Drug Administration has not approved gabapentinoids for pediatric pain indications, their off-label use continues to rise. A tertiary children's hospital reported a 1.3 fold increase in pregabalin prescriptions between 2013 and 2019, with indications including musculoskeletal pain, neuropathic pain, visceral pain, and headaches.[1] This trend reflects growing clinical interest, despite the absence of robust pediatric-specific efficacy data.

Pharmacokinetic analyses demonstrate that children clear pregabalin more rapidly than adults, supporting weight-based dosing regimens. Current guidance recommends 2.5-10 mg/kg/day for children aged 4-16 years weighing ≥30 kg, and 3.5-14 mg/kg/day for those <30 kg, with renal elimination necessitating individualized dosing for impaired renal function.[2] These pharmacologic considerations are reinforced by phase 1 data describing predictable pharmacokinetics and acceptable tolerability in children, with sedation and dizziness being the most commonly observed adverse effects.[3]

Evidence evaluating perioperative use in children is emerging but limited. Randomized controlled trials indicate that preoperative pregabalin may reduce emergence agitation and early postoperative analgesic needs following sevoflurane anesthesia. In pediatric oncology, small cohorts report improvements in vincristine-induced neuropathic pain and reductions in opiod consumption after pregabalin initiation.[4] These findings align with adult data, where systematic reviews demonstrate modest reduction in oipoid requirements and early postoperative pain. However, concerns surrounding sedation, respiratory depression and variable clinical benefit persist, underscoring the need for cautious interpretation.

Beyond chronic pain management, pregabalin has shown potential value in perioperative settings. Marouf reported that preoperative pregabalin administration significantly reduced emergence agitation in children undergoing sevoflurane anesthesia, suggesting a role in modifying postoperative behavioral responses.[5] Although promising, these findings require confirmation in larger studies to establish optimal dosing and evaluate potential interactions with anesthetic agents.

Collectively, these studies highlight both the potential and the limitations of pregabalin use in children. Although emerging evidence supports its role in selected indications, variability in outcome assessments, limited sample sizes, and the scarcity of large, well-designed trials continue to hinder evidence-based clinical decision-making. Taken together, current evidence indicates that gabapentinoids hold promise for perioperative analgesia, particularly through mechanisms that reduce central sensitization and opioid burden. However, the variability in clinical responses, limited specific randomized data in children, and safety concerns in vulnerable populations necessitate a cautious, evidence driven approach. Priorities for the field should include multicenter randomized trials in pediatric surgical cohorts, standardized pain phenotyping, validated pediatric outcome instruments, and careful evaluation of respiratory and neurocognitive safety endpoints.

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