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Effect of Atracurium and Cis-Atracurium on Reducing Pain During Propofol Injection in the Induction of Anesthesia for Patients Undergoing Elective Surgery: A Systematic Review

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ABSTRACT

Introduction: Pain during propofol injection is a common and distressing issue for patients undergoing induction of anesthesia, often leading to significant discomfort and anxiety. Effective management of this pain is crucial for improving patient experiences and outcomes. This systematic review aimed to compare the effects of atracurium and cis-atracurium in reducing propofol injection pain in patients scheduled for elective surgery, providing evidence-based guidance for anesthetic practice.

Search Strategy: A comprehensive literature search was conducted across several databases, including Scopus, Web of Science, PubMed, and Cochrane, as well as search engines such as Google Scholar, focusing on randomized controlled trials (RCTs) that compare atracurium and cis-atracurium for reducing pain during injection. Additionally, propofol was compared. Researchers used medical subject headings (MeSH) to identify the key terms “atracurium”, “propofol”, “cis-atracurium”, and “pain”. Inclusion criteria entailed RCTs involving adult patients (18 years and older) undergoing elective surgery who received atracurium or cis-atracurium before propofol administration. Studies were excluded if they included emergency surgery, a pediatric population, or the combined use of other analgesics/anesthetics that could confound the results. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist was used to ensure a structured and transparent review process.

Results: A total of 12 studies met the inclusion criteria and were included in the final analysis. Also, eight studies evaluated cis-atracurium and four atracurium. The selected studies varied in sample size, methodology, and outcome measures but consistently assessed pain using standardized scales. Results showed a significant reduction in propofol injection pain with cis-atracurium compared to atracurium. Cis-atracurium was more effective than atracurium, especially at higher doses (0.1 mg/kg).

Conclusion and Discussion: Cis-atracurium is more effective than atracurium in reducing pain caused by propofol injection during induction of anesthesia for elective surgeries. This finding can inform anesthesia procedures and increase patient comfort during induction. High-quality, large-scale RCTs are recommended to consolidate these findings and explore the underlying mechanisms.

Keywords: Anesthesia, Atracurium, Pain, Propofol

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