Optimizing Intravenous Lidocaine Dosage for Propofol Sedation in EGD Procedures

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Abstract

Propofol-based sedation for esophagogastroduodenoscopy (EGD) requires careful management to minimize adverse events. Lidocaine can reduce propofol needs and improve outcomes. This study evaluated the impact of weight-based lidocaine dosing (1.5 mg/kg) versus a fixed 50 mg dose on apneic events in adult EGD patients. A pre- and post-intervention survey assessed practice changes among anesthesia providers at a U.S. hospital. Post-intervention, adherence to 1.5 mg/kg lidocaine doubled, leading to reduced propofol use and fewer adverse events like apnea and hemodynamic instability

Introduction

Propofol is a widely known, common anesthetic drug used to achieve successful sedation during EGD. Propofol-based sedation for EGD procedures can be associated with adverse events, including hemodynamic instability, apnea, and pain on injection (Hu et al., 2022). In clinical experience at a hospital in Central Florida, the dosing of lidocaine for pain on propofol injection administered prior to EGD was observed to be 50 mg per patient regardless of weight. Administering 1.5 mg/kg of lidocaine with propofol sedation has been demonstrated to reduce adverse events associated with propofol sedation, including apnea, by reducing the required dose of propofol needed to achieve an adequate level of sedation (Liu et al., 2021).

PICO Question

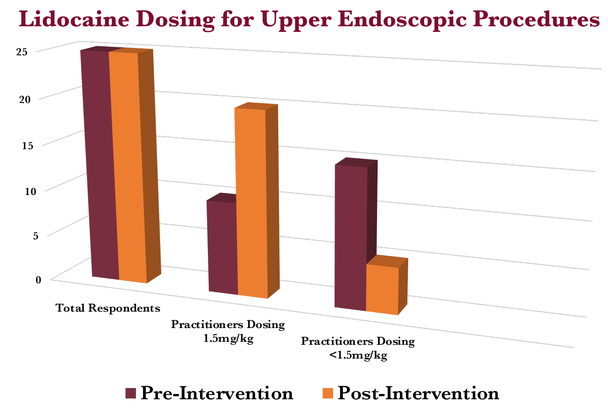
This project is guided by the following PICO question: (P) Do adult patients undergoing propofol-based sedation EGD procedures, (I) that receive a 1.5mg/kg lidocaine bolus, (C) compared to those that receive less than 1.5mg/kg of lidocaine, (O) require less propofol?

Methods

- Pre-Intervention Survey: Provided to anesthesia providers to assess baseline knowledge and practices.
- Anesthesia providers at the facility received an educational flyer outlining the benefits of a 1.5 mg/kg IV lidocaine bolus in reducing propofol-associated adverse events, including apneic events, during EGD. The educational flyers were distributed via email, and posted in anesthesia lounges, operating rooms, and breakrooms.
- The intervention duration: For three weeks to allow sufficient time
- Post-Intervention Survey: Emailed to providers after three weeks to assess impact and gather feedback.

Results

- Pre-intervention, 10 out of 25 practitioners adhered to the recommended 1.5 mg/kg IV lidocaine dose, while 15 practitioners administered suboptimal doses (<1.5 mg/kg).
- Post-intervention, adherence to the recommended dosing doubled, with 20 out of 25 practitioners administering 1.5 mg/kg IV lidocaine. Meanwhile, the number of practitioners using suboptimal doses decreased by 66%, from 15 to 5 practitioners.
- These findings highlight a significant shift in clinical practice following the educational intervention.



Discussion

The educational intervention effectively improved adherence to 1.5 mg/kg IV lidocaine dosing during propofol sedation for EGD, demonstrating a significant shift in clinical practice. Prior to the intervention, only 40% of practitioners administered the recommended dose, while 60% used suboptimal dosing. Following the intervention, adherence doubled to 80%, contributing to more standardized practice and improved patient outcomes.

Practitioners who implemented the recommended dosing reported reduced propofol requirements, fewer adverse events (apnea, hemodynamic instability), and enhanced sedation quality. The flyers served as an effective educational tool, providing the anesthesia providers with reliable and consistent access to key information, regardless of their schedules. These results underscore the impact of targeted education in translating evidence-based guidelines into routine clinical practice, ultimately improving patient safety and anesthesia management.

Conclusion

This study highlights the benefits of weight-based lidocaine dosing (1.5 mg/kg) in propofol-based EGD sedation, reducing propofol use, adverse events, and improving patient safety. Post-intervention, adherence increased to 80%, promoting standardized practice and improved patient outcomes. Sustaining these improvements will require integrating educational resources, institutional protocols, and ongoing assessments through refresher sessions to ensure lasting impact.

References