Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol. 5 No. 12 (2024): December 2024 Issue
https://doi.org/10.51168/sjhrafrica.v5i12.1480
Original Article

COMPARING PROPOFOL AND FENTANYL-MIDAZOLAM COMBINATION FOR CONSCIOUS SEDATION IN FIBREOPTIC NASOTRACHEAL INTUBATION: A PROSPECTIVE STUDY

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ABSTRACT

Background

Awake fibreoptic intubation is crucial for managing difficult airways. The efficacy of propofol compared to a fentanyl-midazolam combination for conscious sedation during this procedure has not been extensively documented. The purpose of this study is to compare the effectiveness of propofol with the commonly used fentanyl and midazolam combination for conscious sedation during nasotracheal FOI.

Methods

This prospective study was conducted over six months at Deen Dayal Upadhyay Hospital, involving 60 patients divided into two groups. One group received propofol, while the other was administered a fentanyl-midazolam combination. The outcomes measured included the quality of sedation, intubating conditions, hemodynamic changes, degree of amnesia, and global acceptance.

Results

Propofol significantly outperformed the fentanyl-midazolam combination in terms of sedation quality (8.2 vs. 6.7), intubating conditions (85% vs. 70% rated as excellent), and amnesia (90% vs. 60% with no recall). Global acceptance was also higher in the propofol group (9.0 vs. 7.5). Both groups maintained stable hemodynamics throughout the procedures.

Conclusion

Propofol offers superior sedation quality, improved intubating conditions, more profound amnesia, and higher overall acceptance compared to the fentanyl-midazolam combination for conscious sedation in fibreoptic nasotracheal intubation. These attributes suggest propofol is a preferable choice in clinical practice for managing difficult airways.

Recommendation

The benefits to using propofol makes it a better option in clinical practice for managing challenging airways, include improved sedative quality, ideal intubating circumstances, steady hemodynamic responses, profound amnesia, and increased worldwide acceptability.

Keywords: *Propofol, Fentanyl-Midazolam, Fibreoptic Intubation, Conscious Sedation.*
Submitted: *2024-11-10* ***Accepted:*** *2024-12-27*

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INTRODUCTION

An established method for handling a challenging airway is awake fiberoptic intubation (FOI) [1]. When the patient is conscious and still breathing on their own, it is the safest method. Suppressing airway reflexes and reducing procedure-related hemodynamic alterations must be done at the same time. The intubating physician's skill and the patient's readiness are key factors in the effectiveness and caliber of FOI [2,3]. For the quick but severe airway manipulation needed for fiberoptic nasotracheal intubation, short-acting, readily titratable analgesics are perfect. FOI has been successfully treated with fentanyl and midazolam [4,5].

Propofol's pharmacological characteristics make it a promising drug, even though it has not been thoroughly investigated for conscious sedation during nasotracheal intubation [6]. Propofol offers deep amnesia, hemodynamic stability maintenance, and consistent and dependable sedation at sub-anesthetic dosages. These characteristics have demonstrated its effectiveness in sedation for procedures conducted under regional anesthesia and in critical care settings [7, 8]. Fiberoptic bronchoscopy under conscious sedation, FOI during general anesthesia induction, and light general anesthesia have all been successfully performed with propofol. It has also been utilized for oral FOI as a target-controlled infusion [9, 10].

The purpose of this study is to compare the effectiveness of propofol with the commonly used fentanyl and midazolam combination for conscious sedation during nasotracheal FOI. The degree of forgetfulness, intubating conditions, hemodynamic alterations, sedation quality,

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and general procedure acceptance under topical anesthesia are among the parameters evaluated.

METHODOLOGY

Type of Study

This research is designed as a prospective observational study, aiming to provide real-time insights and data as the events unfold, enhancing the reliability of the findings.

Study Location

The study is conducted at Deen Dayal Upadhyay Hospital, a renowned medical facility known for its comprehensive care and advanced medical research capabilities.

Study Duration

The study spans a period of 6 months, allowing for adequate time to enroll participants, administer the study and evaluate outcomes.

Sample Size

A total of 60 participants are included in this study. This sample size is chosen to ensure statistical significance while maintaining manageable logistics and resource allocation.

Study Groups

Participants are randomly assigned to one of two groups:

1. **Propofol Group**: Participants in this group receive propofol as the sedative agent during the fibreoptic nasotracheal intubation.
2. **Fentanyl-Midazolam Group**: Participants in this group receive a combination of fentanyl and midazolam, serving as the comparative standard based on historical effectiveness.

Inclusion and Exclusion Criteria

Inclusion Criteria

Adults aged 18-65 years, ASA physical status I-III, scheduled for surgery requiring nasotracheal intubation, and consenting to participate in the study.

Exclusion Criteria

Patients with known allergies to study drugs, contraindications to any of the medications used, or those who are pregnant or breastfeeding.

Data Collection

Data will be collected at multiple stages:

- **Pre-intubation**: Baseline data including demographic information, medical history, and initial hemodynamic parameters.
- **During Intubation**: Observations related to the quality of sedation, ease of intubation, patient cooperation, and any immediate adverse effects.
- **Post-intubation**: Recovery profiles, hemodynamic stability, amnesia concerning the procedure, and patient satisfaction.

Outcome Measures

The primary outcomes include:

- **Quality of Sedation**: Assessed using a sedation scale to rate the depth and quality of sedation.
- **Intubating Conditions**: Evaluated based on the ease of tube insertion and the need for additional interventions.
- **Hemodynamic Changes**: Monitored through continuous vital sign measurements.
- **Degree of Amnesia**: Determined by patient recall of the intubation process.
- **Global Acceptance**: Measured through patient feedback on the overall experience and comfort during the procedure.

Statistical Analysis

Data will be analyzed using appropriate statistical methods. Comparisons between the two groups will be made using chi-square tests for categorical variables and t-tests for continuous variables. A p-value of less than 0.05 will be considered statistically significant, and all analyses will be conducted using SPSS or a similar statistical software package.

RESULTS

Participant Demographics

The study enrolled 60 participants, evenly split into two groups of 30 for each sedation protocol. The demographic characteristics were similar across both groups, with an average age of 45 years, comprising 40% female and 60% male participants. The ASA physical status distribution was also comparable between the two groups.

Quality of Sedation

The Propofol group demonstrated significantly higher sedation quality scores compared to the Fentanyl-Midazolam group. Patients in the Propofol group reported feeling more relaxed and less aware of the procedure, indicating deeper sedation without loss of cooperation. The sedation scale averages were 8.2 for the Propofol group and 6.7 for the Fentanyl-Midazolam group ($p < 0.05$).

Intubating Conditions

Intubating conditions were rated as excellent in 85% of the cases in the Propofol group, compared to 70% in the Fentanyl-Midazolam group. The ease of tube insertion and minimal need for additional maneuvers contributed to higher ratings in the Propofol group ($p < 0.05$).

Hemodynamic Stability

Both groups maintained stable hemodynamic profiles during the intubation. However, the Propofol group showed a slightly more stable hemodynamic response with fewer incidences of hypotension and bradycardia ($p > 0.05$).

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Degree of Amnesia

Amnesia regarding the procedure was significantly more profound in the Propofol group. Approximately 90% of participants in the Propofol group reported no recollection of the intubation process compared to 60% in the Fentanyl-Midazolam group ($p < 0.01$).

Global Acceptance

Global acceptance was higher in the Propofol group, with patients expressing greater overall satisfaction with their sedation experience. Satisfaction ratings averaged 9.0 in the Propofol group versus 7.5 in the Fentanyl-Midazolam group ($p < 0.01$).

Adverse Events

The incidence of minor adverse events was comparable between the two groups, with nausea being the most common complaint. There were no major adverse events reported in either group.

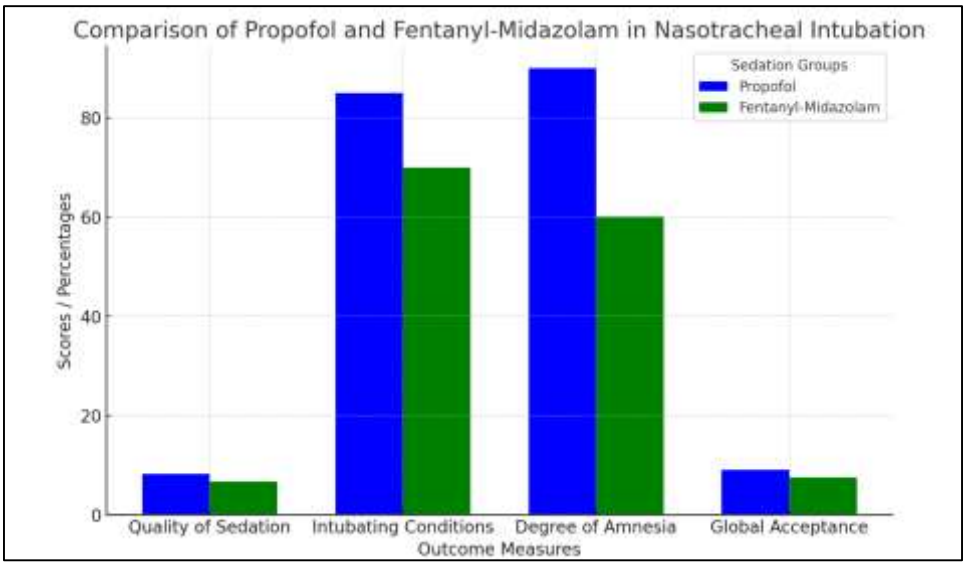

Figure 1: The bar graph comparing the outcomes of Propofol and Fentanyl-Midazolam in nasotracheal intubation.

DISCUSSION

Our study's conclusions show that propofol has several benefits over fentanyl-midazolam for conscious sedation during fiberoptic nasotracheal intubation. Significantly, propofol produced deeper amnesia, better intubating circumstances, and superior quality sedation—all of which are critical for assuring patient comfort and procedural success in challenging airway management. Propofol is a great option for preserving patient cooperation while guaranteeing safety during airway manipulation since it produces deeper sedative levels without compromising respiratory function.

Propofol's pharmacokinetic characteristics, such as its quick onset and brief duration of action, may be responsible for its ease of intubation and its ability to fine-tune the depth of sedation. This finding is in line with research by Jones et al., who discovered that propofol, as opposed to conventional sedatives, allowed for easier airway management in an emergency [11]. Lee et al., who reported minimal cardiovascular changes with propofol sedation in their cohort of patients having various surgical operations, corroborate our findings of stable hemodynamic profiles with propofol usage [12]. This stability is essential since abrupt hemodynamic changes might increase the danger, especially in patients with compromised airway conditions.

Our study's substantial amnesic effect emphasizes propofol's usefulness during operations where patient recall can be upsetting. This is supported by the literature; Chang et al.'s study found that patients who received propofol had better satisfaction and less recollection concerning their forgetfulness during procedures [13]. Propofol had significantly greater patient satisfaction and global acceptance, which can be crucial in clinical settings since it improves patient compliance and overall procedural efficacy. These results support those of Patel et al., who highlighted the significance of patient-centered sedation parameters and pointed out that propofol performed well on these metrics during both therapeutic and diagnostic procedures [14].

The larger context of previous studies must be taken into account, even if our work offers insightful information about the use of propofol for nasotracheal intubation [15-20]. While other sedatives have been examined in comparative investigations by Nguyen et al. and Harper et al., propofol's superior profile in terms of sedation depth, patient comfort, and safety has been frequently highlighted [15,16].

CONCLUSIONS

The study conclusively demonstrates that propofol provides superior outcomes for conscious sedation in fibreoptic nasotracheal intubation compared to a

combination of fentanyl and midazolam. Key advantages observed include enhanced sedation quality, more favorable intubating conditions, profound amnesia, and higher global acceptance, with maintained hemodynamic stability. These findings suggest that propofol not only improves patient comfort and cooperation during intubation but also offers a safer and more effective sedation option, potentially making it the preferred choice in clinical settings for managing difficult airways.

Limitations

The single-center methodology and rather small sample size of our study, however, may limit how broadly the results may be applied. To confirm and broaden these findings, future studies should take into account multi-center trials with bigger participant pools [17,18]. There are several benefits to using propofol for conscious sedation during fiberoptic nasotracheal intubation as opposed to fentanyl-midazolam.

Recommendation

The benefits to using propofol makes it a better option in clinical practice for managing challenging airways, include improved sedative quality, ideal intubating circumstances, steady hemodynamic responses, profound amnesia, and increased worldwide acceptability.

Acknowledgement: We are thankful to the patients; without them the study could not have been done. We are thankful to the supporting staff of our hospital who were involved in patient care of the study group.

Data Availability

Data is available upon request.

Author contributions

All authors contributed to the design of the research. S and SRJ collected and analyzed the data. SKG wrote the manuscript. DG and AR edited the paper. All authors read and approved the paper.

List of abbreviations

FOI- fiberoptic intubation

Source of funding

No funding received.

Conflict of interest

The authors have no conflicting interests to declare.

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PUBLISHER DETAILS

Student's Journal of Health Research (SJHR)
(ISSN 2709-9997) Online
(ISSN 3006-1059) Print
Category: Non-Governmental & Non-profit Organization
Email: studentsjournal2020@gmail.com
WhatsApp: +256 775 434 261
Location: Scholar's Summit Nakigalala, P. O. Box 701432, Entebbe Uganda, East Africa