Sedation by Non-Anesthesiologists: Are Opioids and Benzodiazepines Outdated?

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Key Words

Propofol · Midazolam · Opioids

Abstract

At least 3 systematic reviews have assessed the safety of propofol versus traditional agents used for sedation in gastrointestinal endoscopic procedures. These reviews uncovered a marked variability in study design and found the quality of the included randomized controlled trials to be poor. To date there is no demonstrated difference in the endoscopic safety or efficacy of propofol sedation compared to sedation with benzodiazepine with or without an opioid. However, a trend towards reduced complications and higher levels of satisfaction and cost-effectiveness with propofol during colonoscopies, and higher levels of patient satisfaction and improved efficacy may also be expected by using propofol during upper gastrointestinal endoscopies.

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aimed to summarize current evidence on the safety and efficacy of this option (up to September 2009) by updating systematic reviews previously published [1–3] on this subject.

Methods

MedLine was searched with a query based on previous manuscripts using key words for endoscopy, sedation and pharmacological agents. Manuscripts comparing propofol alone versus benzodiazepines either alone or in association with narcotics were considered. Previous reviews seem to aggregate data from different lists of manuscripts, but a low quality of manuscripts and variability of criteria were noted in all [1, 3].

Safety Outcomes

For upper gastrointestinal endoscopy, 4 manuscripts compared the use of propofol versus midazolam [4–6] and compared propofol versus midazolam plus narcotic [7, 8]. No significant differences were noticeable in the incidence of hypoxemia [1, 3] or hypotension [3]. Moreover, 6 studies [9–14] assessed the use of propofol versus midazolam plus narcotic during colonoscopies, and significant differences were detected in the incidence of bra-

Introduction

Worldwide, both anesthesiologists and non-anesthesiologists, depending on local or national laws, have been increasingly using propofol to replace classical sedation protocols based on opioids and benzodiazepines. We

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dyscardia, hypotension or hypoxemia [3, 12]. Qadeer et al. [3] also aggregated data on ERCP/EUS and described the same similarity in safety outcomes.

Efficacy

Procedure times were similar when comparing those patients with propofol versus midazolam plus narcotic, but recovery times were shorter for propofol [1, 12]. More recently, a randomized trial of 60 patients described that improved efficacy may be expected by using propofol (vs. midazolam) in upper gastrointestinal endoscopies [15]. Meining et al. [15] randomized 30 patients for midazolam and 30 patients for propofol and assessed with a scale the quality of performed endoscopies (via videotape). Significantly better scores for assessments of the z-line, duodenal bulb and folds were noted in the propofol arm. Four patients (13%), however, randomized to midazolam, did not perform the examination.

Patient and Doctor Satisfaction Levels

Again, no differences were reported as significant for patient satisfaction and willingness to repeat the procedure when considering the four manuscripts in upper gastrointestinal endoscopy [4–8]. However, considering

the studies evaluating colonoscopies [9–14], a higher satisfaction and a lower frequency of memory of the procedure was described by those patients given propofol.

Economic Analysis

When compared to propofol alone, the use of meperidine and midazolam was dominated by a cost-effectiveness standpoint even when accounting for added personnel required for propofol administration [8]. By using economic modeling, propofol-based sedation for colonoscopy was found to be more profitable than other combinations, mostly due to the enhanced recovery time [16].

Conclusion

Although the reports taken into account were of low quality, there is to date no demonstrated difference in endoscopic safety or efficacy with propofol sedation compared to sedation with a benzodiazepine with or without an opioid. However, a trend towards the reduction of complications, higher levels of satisfaction and cost-effectiveness for the use of propofol during colonoscopies, and higher levels of patient satisfaction and improved efficacy may be expected by using propofol during upper gastrointestinal endoscopies.

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