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Harmony of Duet over Solo: Use of Midazolam or Propofol for Sedative Endoscopy in Pediatric Patients

Kwang Hyun Ko and Ki Baik Hahm

Digestive Disease Center, CHA Bundang Medical Center, CHA University, Seongnam, Korea

See "Propofol versus Midazolam for Sedation during Esophagogastroduodenoscopy in Children" by Ji Eun Oh, Hae Jeong Lee, Young Hwan Lee, on page 368-372

The aims of the sedation during endoscopic procedures are to increase the comfort of patients, to improve endoscopic performance, and to increase the satisfaction of both patient and performing endoscopist. The optimal level of sedation for endoscopy is conscious sedation, moderate degree of sedation, that is, a drug-induced depression of consciousness during which patients can respond purposefully to verbal commands. Therefore, adequate spontaneous ventilation and cardiovascular function is usually maintained.¹ Midazolam is the drug most commonly used for sedation during gastrointestinal endoscopy (GIE) procedures. To date, several data have shown that when propofol is compared with midazolam in terms of their effectiveness, propofol is acknowledged to be superior for action time and recovery time. However, dark aspect of coin also exists that propofol has more serious cardiopulmonary depression compared to midazolam and more respiratory distress, apnea and hypotension than other sedatives.^{2,3}

Endoscopic procedure is a well-established tool for diagnosis and treatment in pediatric gastroenterology as much as for adult patients. Majority of pediatric esophagogastroduodenoscopy performed under sedation using sedative drugs, such as midazolam, propofol, and ketamine, to avoid restraining and the recall of unpleasant GIE, because procedural sedation guarantee optimum comfort for and cooperation from children undergoing GIE.⁴ Endoscopic procedures with sedatives provide comfort not only for the patient but also for the endos-

copist. As much as benefits, the safety should be the first priority to be considered during the endoscopy, especially for younger pediatric patients. Propofol has limitations, when used in sedative endoscopy, in its narrow safety zone, which makes moderate sedation rapidly shift to deep sedation and general anesthesia without antidote. For this reason, propofol was permitted to be used only by anesthesiologist in the early period of sedative endoscopy; however, American Gastroenterological Association, American College of Gastroenterology, and American Society for Gastrointestinal Endoscopy denoted that propofol administered by endoscopists is effective and safe irrespective of the patient's age.⁵ Recent data showed that not only anesthesiologists but endoscopists could control propofol safely during endoscopy.⁶⁻⁸ Complications, such as local pain from propofol injection and unpleasant feeling after recovery,^{2,3} may be overcome by decreasing the dose of propofol. Several studies reported that premedication with midazolam could ameliorate the level of patient discomfort compared to when using propofol alone.^{9,10} A study from Canada demonstrated that sedation with propofol alone or propofol combined with fentanyl or midazolam in children was safe and effective. Propofol in combination with fentanyl or midazolam provided better sedation and ease of endoscopy than propofol alone.¹¹

In this issue of *Clinical Endoscopy*, Oh et al.¹² compared midazolam and propofol for the sedative endoscopy in children, revealing that propofol had shorter recovery time and little increment of heart rate compared to midazolam. These results are similar to a previous report.¹³ According to the data, local pain occurred only in 17.6% of the propofol group, much lower compared to 60% reported in a previous study,¹⁴ but no difference was found in terms of respiratory distress. As limitations of the study by Oh et al.,¹² the study was retrospective and single center experience with relatively small sample size,

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Correspondence: Ki Baik Hahm

Digestive Disease Center, CHA Bundang Medical Center, CHA University, and CHA Cancer Prevention Research Center, CHA Cancer Institute, 59 Yatap-ro, Bundang-gu, Seongnam 463-712, Korea

Tel: +82-31-780-5220, Fax: +82-31-780-5219, E-mail: hahmkb@cha.ac.kr

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possibly causing a selection bias. Total dosage of sedatives associated with the incidence of complications, especially for the respiratory distress, was not mentioned at all. Moreover, as the authors stated in the discussion, data on induction time and patient's satisfaction in each sedation group are lacking. Nonetheless, this report might be the first one which compared the efficacy and safety of intravenously administered midazolam and propofol for sedation in children during endoscopy in Korea. These data support that the use of propofol under the supervision of an endoscopist in the pediatric endoscopy setting is safe compared to midazolam.

In contrast to adult patients, the necessity for sedative endoscopy in children is much higher and a prerequisite to achieve the purpose of GIE. Traditional enema sedation or restraint yielded quite lower level of satisfaction to both parents and doctors. Considering the incidence of diseases associated with social stress and early puberty, no way to avoid sedation for pediatric endoscopy is secured from this study. However, prospective study with considerable number of patients with subcategory evaluation using combination of midazolam and/or propofol with other sedatives is required to minimize complications of propofol. As harmony of duet over solo, appropriate combination of propofol and midazolam might reduce the existing risks of respiratory distress and others.

Conflicts of Interest

The authors have no financial conflicts of interest.

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