

## Propofol sedation with a target-controlled infusion pump and bispectral index monitoring system in elderly patients during a complex upper endoscopy procedure

Tatsuhiko Gotoda, MD,<sup>1</sup> Hiroyuki Okada, MD,<sup>2</sup> Keisuke Hori, MD, PhD,<sup>1</sup> Yoshiro Kawahara, MD,<sup>2</sup> Masaya Iwamuro, MD,<sup>1</sup> Makoto Abe, MD,<sup>1</sup> Yoshiyasu Kono, MD,<sup>1</sup> Kou Miura, MD,<sup>1</sup> Hiromitsu Kanzaki, MD,<sup>1</sup> Masahide Kita, MD,<sup>1</sup> Seiji Kawano, MD,<sup>2</sup> Kazuhide Yamamoto, MD<sup>1</sup>

Okayama, Japan

**Background and Aims:** Although the usefulness of propofol sedation during endoscopic submucosal dissection (ESD) for gastric neoplasms was reported previously, information is limited on its use in elderly patients. We investigated the safety and efficacy of propofol sedation with a target-controlled infusion (TCI) pump and bispectral index (BIS) monitoring system (TCI/BIS system) in elderly patients during gastric ESD.

**Methods:** Included were 413 consecutive gastric ESD procedures involving 455 lesions (379 patients) performed in patients under propofol sedation with a TCI/BIS system between October 2009 and September 2013. Patients were divided into 3 groups: group A, age <70 years (n = 162); group B, age ≥70 and <80 years (n = 171); and group C, age ≥80 years (n = 80). We compared the propofol dose and adverse events (eg, hypotension and hypoxemia) during ESD.

**Results:** Older groups required a lower target concentration of propofol (group A: median 2.1 µg/mL [interquartile range (IQR), 1.9-2.3]; group B: median 1.6 µg/mL [IQR, 1.3-1.8]; and group C: median 1.4 µg/mL [IQR, 1.2-1.6];  $P < .0001$ ). Hypotension tended to occur in the younger group, and hypoxemia occurred at a significantly higher rate in the older groups, although the number of cases was small. Low preoperative systolic blood pressure ( $\leq 125$  mm Hg) was associated with hypotension (odds ratio [OR], 1.73; 95% confidence interval [CI], 1.12–2.70;  $P = .013$ ) and abnormal pulmonary function was associated with hypoxemia in groups B and C (OR, 4.54; 95% CI, 1.01–31.5;  $P = .048$ ).

**Conclusions:** Elderly patients required lower doses of propofol with the TCI/BIS system than younger patients. Attention to hypoxemia is necessary in elderly patients, particularly patients with abnormal pulmonary function. (Gastrointest Endosc 2016;83:756-64.)

In recent years with the increasingly aging society, the number of endoscopic examinations for elderly persons has increased in Japan. As the number of elderly persons with upper GI diseases has increased, so has the number of elderly patients undergoing complex endoscopic procedures such as endoscopic submucosal dissection (ESD). ESD is very useful and effective in treating early gastric

cancer mainly because it is a less-invasive treatment for achieving curative resection, as has been reported in the literature.<sup>1-5</sup> In addition, its usefulness in elderly patients has been recognized recently.<sup>6-9</sup>

Because ESD is more time-consuming than conventional EMR, multiple doses of a sedative are usually required to provide an adequate level of sedation.<sup>10</sup>

*Abbreviations:* BIS, bispectral index; ESD, endoscopic submucosal dissection; IQR, interquartile range; SBP, systolic blood pressure; Spo<sub>2</sub>, preoperative blood oxygen saturation; TCI, target-controlled infusion.

**DISCLOSURE:** All authors disclosed no financial relationships relevant to this publication.

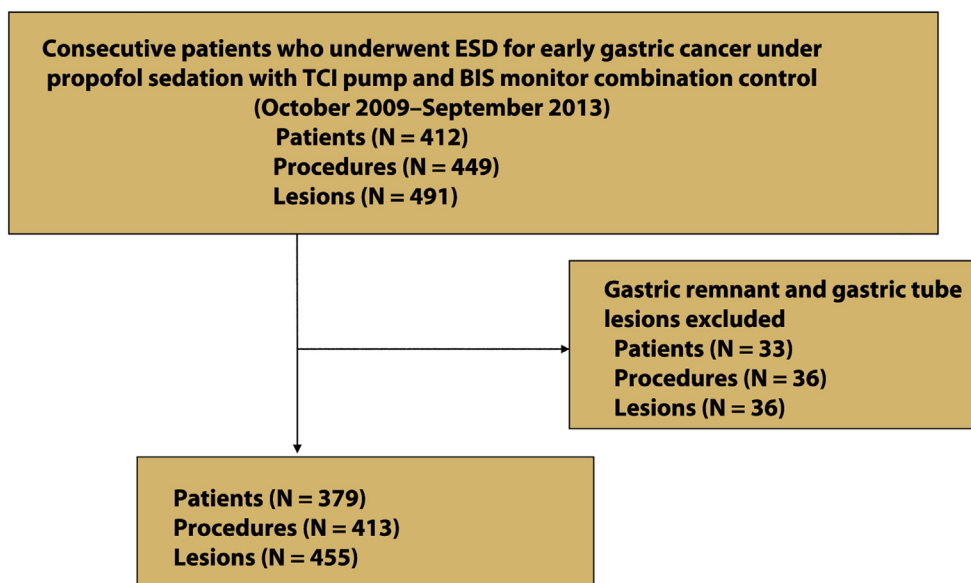
Copyright © 2016 by the American Society for Gastrointestinal Endoscopy 0016-5107/\$36.00

<http://dx.doi.org/10.1016/j.gie.2015.08.034>

Received March 16, 2015. Accepted August 6, 2015.

**Current affiliations:** Department of Gastroenterology and Hepatology, Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences (1), Department of Endoscopy, Okayama University Hospital (2), Okayama, Japan.

**Reprint requests:** Keisuke Hori, MD, PhD, Department of Gastroenterology and Hepatology, Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences, 2-5-1 Shikata-cho, Okayama 700-8558, Japan.



**Figure 1.** Flowchart of study selection. *BIS*, bispectral index; *ESD*, endoscopic submucosal dissection; *TCI*, target-controlled infusion.

Propofol is a short-acting sedative with a rapid recovery profile, and its use is associated with a number of additional advantages, including relative ease in safely maintaining an appropriately depressed level of consciousness and a suitable amnesic state.<sup>11</sup> These advantages have resulted in an increased use of propofol worldwide for standard endoscopy procedures. However, oxygen desaturation and hypotension are drawbacks of propofol sedation. When treating older patients, attention is necessary to avoid sedation-related adverse events because elderly individuals generally have 1 or more underlying diseases.

It can be hypothesized that elderly patients require lower doses of sedation to achieve similar pharmacological effects compared with younger patients. A target-controlled infusion (TCI) system, which is incorporated into a conventional infusion pump (TCI pump), enables automatic control of the dose of sedative drugs by a computer-assisted infusion algorithm of pharmacokinetics for calculating the effect-site concentration.<sup>12,13</sup> However, the pharmacokinetic model in the TCI pump may not be optimal when considering the age and comorbidities in individual patients.<sup>14</sup> Bispectral index (BIS) monitoring is an electroencephalography-based method that quantifies the depth of anesthesia by analyzing the electroencephalogram and uses a complex algorithm to generate an index score, providing an objective measurement of the level of consciousness in sedated patients.<sup>15-17</sup> Recently, the utility of the combination of a TCI pump and BIS monitoring system (TCI/BIS system) for endoscopic treatment was reported.<sup>18</sup>

However, there is limited information on the outcome of endoscopic treatment and the sedation used in elderly patients.<sup>19</sup> This study aimed to evaluate the safety and efficacy of propofol sedation with appropriate amounts of

propofol with the use of the TCI/BIS system for elderly patients during gastric ESD.

## METHODS

### Patients

A total of 449 consecutive ESD procedures for 491 early gastric neoplasms (412 patients) were performed at Okayama University Hospital by using propofol sedation with a TCI/BIS system between October 2009 and September 2013 and were included in this study. Thirty-three patients accounting for 36 procedures involving 36 lesions were excluded from the analysis because the lesions were in the gastric remnant and gastric tube. Thus, 379 patients who underwent 413 procedures for 455 lesions were evaluated (Fig. 1). ESD was conducted as one of the treatment options for lesions with a preoperative diagnosis of gastric adenoma or possible node-negative early gastric cancer based on the expanded criteria proposed by Gotoda et al.<sup>20</sup> The study was approved by the Okayama University School of Medicine Clinical Ethics Committee on Human Experiments in accordance with the Declaration of Helsinki.

### Study design

The patients were divided into 3 groups according to age: group A, <70 years old, 162 procedures (39%); group B, ≥70 and <80 years old, 171 procedures (41%); and group C, ≥80 years old, 80 procedures (20%). Associations between the age group and the propofol dose or sedation-related adverse events during the ESD procedure were examined.

As for the target blood concentration and propofol dose, the setting of target blood concentration (μg/mL),

Download English Version:

<https://daneshyari.com/en/article/3301716>

Download Persian Version:

<https://daneshyari.com/article/3301716>

[Daneshyari.com](https://daneshyari.com)