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Letters to the Editor

In response to the editorial "Sedation in endoscopy in 2016: is it safe sedation with propofol led by the endoscopist in complex situations?"

Key words: Sedation. Endoscopy. Anesthesia. Adverse effects.

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Dear Editor,

We read with interest the editorial "Sedation in endoscopy in 2016: is it safe sedation with propofol led by the endoscopist in complex situations?" (1). We are interested in clarifying some significant inaccuracies found in the text. Most of the author's claims are based on the work by Vargo et al. (2). Vargo et al. conducted a retrospective observational study using data extracted from the National Endoscopic Database, which is a voluntary electronic record of endoscopic procedures performed by professionals and institutions participating in the Clinical Outcomes Research Initiative (CORI). As the CORI states on its website, analysis of the recorded data allows the description of clinical practices or the establishment of working hypotheses, but clinical conclusions with a high level of evidence cannot be extracted from this database of voluntary registrations (3). Vargo et al. (2) compared the morbidity in sedations directed by anesthesia professionals (ADS) with the morbidity in sedations under the responsibility of endoscopists (EDS). This comparison is unfair; the authors explain that EDS options are primarily "targeting minimal to moderate sedation", while "anesthesia professionals are typically targeting deep sedation or general anesthesia". Thus, the prevalence of propofol use in EDS procedures was less than 2.9%. This crucial aspect was noted by Vargo et al. as follows: "One of the key procedural data points missing from the database is the type of sedation given by the provider (the targeted level of sedation and if the patient was intubated or not)". However, this point has unfortunately gone unnoticed by González-Huix Lladó (1). In most of the references cited by González-Huix Lladó comparing EDS with ADS, EDS was not propofol-based but was instead conscious sedation with benzodiazepines and low doses of opioids (4-7).

It is universally accepted that deep sedation involves more risks than light-to-moderate sedation. Hence, deep sedation is normally provided by anesthesiologists in Spain and in most countries of the European Union (8,9). The results of Vargo et al. (2) highlight, in spite of the fact that they were non-significant, that there were six deaths attributable to light-to-moderate sedation in the EDS group compared with one in the ADS group, which implies a relative risk of death 1.64 times higher during EDS. This, together with the similar incidence of morbidity in both groups (except for airway management events without mayor consequences in gastrointestinal endoscopies under ADS), reinforces the principle that the presence of an anesthesiologist during endoscopy allows exploration under deep sedation with similar complication rates to those of light-to-moderate sedation led by endoscopists.

González-Huix Lladó (1) also referred to the recent work by Pérez-Cuadrado et al. in endoscopic retrograde cholangiopancreatography (ERCP) (10), which was a retrospective observational study with important methodological limitations. Pérez-Cuadrado et al. did not monitor the depth of anesthesia, so it is not actually possible to determine which patients were in a deep sedation state independently of the dose administered. We know that different individuals react in different manners to the same doses of general anesthetics due to factors including age, weight, and other anthropometric and clinical characteristics. Although Pérez-Cuadrado et al. (10) mentioned the work of Braunstein et al. (11) when defining high doses of sedative drugs, they misused the limits proposed by Braunstein et al. Thus, Pérez-Cuadrado et al. probably underestimated the deep-sedation group of patients in their study. Furthermore, neither Braun-

stein et al. nor Pérez-Cuadrado et al. calculated sedative doses relative to plasmatic levels, ideal body weight, or patients' age. Pérez-Cuadrado et al. also did not register adverse events that occurred due to factors unrelated to sedation, which incidentally were not properly defined in the manuscript. The large difference in median propofol doses between cases and controls (367.5 mg *versus* 157 mg, respectively) (10) implies that cases were inappropriately matched with a lighter anesthesia-state control group. Hence, it seems unlikely that the reported rate of 22% for aborted or incomplete procedures in the group with deeper sedation may be considered as an acceptable result. Similarly, the reported rates of 1.1% hypoxemia and 0.3% severe bronchospasm also appear unacceptably high when compared with those previously reported for ADS in ERCP (12).

The present debate about deep sedation-anesthesia states goes beyond the topic of cardiovascular and respiratory adverse events, and targets the cognitive consequences and global increased mortality of uncontrolled sedation states, especially in specific fragile populations (13). We agree with Vargo et al. (2), who discussed that the question might be which patients scheduled for endoscopic procedures would benefit from a light-to-moderate sedation, and which would benefit from a deep, propofol-based sedation. We as anesthesia professionals are interested in preventing the overtreatment of our patients by avoiding administration of deep sedation when it is not strictly necessary, and we believe that this axiom is also shared by Spanish endoscopists. Increasing scientific and social concerns about the consequences of deep sedation have probably contributed to the change over the past decade in the patterns of endoscopic sedation in the United States; anesthesia professionals have been increasingly involved in sedation for screening colonoscopies, rising from 11% in 2001 to 53.4% in 2015 (14,15).

Finally, when approaching the debate from the aspect of cost, efficacy and clinical outcomes, González-Huix Lladó (1) did not consider the convenience of non-physicians performing endoscopies. There is enough evidence to show that endoscopies performed by nurse endoscopists and other technicians under the supervision of the endoscopist are cost-effective and have similar clinical outcomes when compared with endoscopies performed by endoscopists (16-18). The practice of colonoscopy and gastrointestinal endoscopies being performed by non-physicians is recognized and accepted in many developed countries (16-20). Most studies have concluded that, in a supervised setting, colonoscopies performed by nurse endoscopists have quality and safety standards comparable with those performed by a physician endoscopist, and can have substantially reduced costs (17,18). Omitting this important data introduced a bias into the global debate regarding costs associated with endoscopic procedures.

We conclude by recommending the development of regulations for sedative techniques in Spain taking into consideration to two basic principles: a) according to published evidence concerning patient safety, deep sedation must be an unequivocal responsibility of the anesthesiologist; and b) we must define which patients are candidates for deep sedation during endoscopic procedures, as this will help to regulate patient flow in clinics and to reduce adverse effects associated with overtreatment of patients.

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