In Response

Barends, Clemens R M; Absalom, Anthony R

Published in:
Anesthesia and Analgesia

DOI:
10.1213/ANE.0000000000005438

Publication date:
2021

In Response

Thank you for the opportunity to respond to the comments of Dr Nielsen[1] about our article.[2] Although we agree that patient satisfaction is an important topic, it is not routinely assessed in our hospital. We do know, anecdotally, of considerable numbers of patients who require serial procedures (eg, for colonoscopy) and who refuse to again have operator-provided sedation (using midazolam and fentanyl) after having experienced sedation administered in the manner described in our article. Nonetheless, we agree fully that data trump "comfortable" assumptions. This requires further prospective study using carefully thought-out methods. Patient satisfaction is a tricky construct, however, particularly if it is assessed after drugs with powerful amnesic effects were used. We have all seen patients undergoing sedation for a procedure who experience pain and discomfort and express their dissatisfaction, but later have no memory of it and express complete satisfaction with their sedation. Is "anguish unremembered" acceptable or not? This issue raises challenges that are not only practical but also ethical and philosophical.

Finally, in response to the other points he raises, we offer the following information. It is certainly worth investigating his hypothesis of a relationship between operator experience and the occurrence of adverse events, but unfortunately, we cannot do this analysis ourselves, as we did not collect information concerning operator identity or experience in our database, which is based on anesthetic records of the procedures. The matter he raises about the use of high-flow nasal oxygen is highly topical and valid, but this technique was not used in our hospital during the study period (2014–2017).

Clemens R. M. Barends, MD, PhD
Anthony R. Absalom, MBChB, FRCA, MD
Department of Anesthesiology
University Medical Center Groningen
University of Groningen
Groningen, the Netherlands
c.r.m.barends@umcg.nl

REFERENCES

1. Nielsen JR. Sedation safety and satisfaction. *Anesth Analg*. 2021;132:e76.
2. Barends CRM, Driesens MK, van Amsterdam K, Struys MMRF, Absalom AR. Moderate-to-deep sedation using target-controlled infusions of propofol and remifentanil: adverse events and risk factors: a retrospective cohort study of 2937 procedures. *Anesth Analg*. 2020;131:1173–1183.

DOI: 10.1213/ANE.0000000000005438

Intraoperative Anaphylaxis: Definition Determines Detection

To the Editor

We read with great interest the article by Burbridge[1] and accompanying editorial,[2] which report an incidence of anaphylaxis to sugammadex substantially lower than previously reported rates. While we agree with the author's analysis and conclusions, we caution readers to place these findings in appropriate context and keep in mind that case screening criteria can significantly bias estimates of incidence.

Timely and accurate diagnosis of anaphylaxis in the operating room is difficult. It is even more difficult to identify a causative agent.[3] Objective measures are imperfect. For example, tryptase levels have high specificity, but low sensitivity and long turnaround times for determination.[4] Hypotension may be noted immediately but is nonspecific in the operating room environment, especially with propofol inductions. Subjective and clinical assessments are similarly flawed. To highlight this point, in a study of 21 experienced anesthesiology teams taking part in a simulated anaphylactic shock scenario, none of the teams made the correct diagnosis after 10 minutes. Only 6 teams considered the diagnosis after prompting from an instructor, likely due to the nonspecificity of presenting signs and symptoms.[5]

Case screening criteria, which are often informed by these clinical signs and symptoms, can also skew estimates. In Burbridge,[1] cases had to have a sugammadex allergy listed in the medical record and/or coadministration of sugammadex and epinephrine within the same anesthesia record to be eligible for manual review and inclusion. Even with these broad criteria, cases of interest may be excluded. We note, for example, that the single patient who experienced anaphylaxis in Min et al[6]—the source of the markedly higher incidence estimate quoted in the sugammadex package insert—did not receive epinephrine, and would have been excluded from the Burbridge[1] study if sugammadex allergy was not written in the chart. Given the extremely low incidence of these events, selection biases causing inclusion or exclusion of even a single case could have a marked effect on the incidence estimate.

In light of the potential for detection and selection biases, methods for estimation of anaphylaxis incidence warrant careful consideration and standardization. In the absence of a reliable standard, care must be taken to interpret findings within the context of their respective methodologies.

M. G. Clark and A. J. Schaffer share first authorship.

Funding: R. E. Freundlich is supported by NIH-NHLBI grant 1K23HL148640. The other authors are supported by institutional funding.