Generalizations About General Anesthesia:
The Unsubstantiated Condemnation of General Anesthesia for Patients Undergoing Intra-arterial Therapy for Anterior Circulation Stroke

To the Editor:

We congratulate Abou-Chebl et al.1 in attempting to determine the predictors of poor outcomes after intra-arterial therapy for acute ischemic stroke. They concluded that patients placed under general anesthesia during intra-arterial therapy for anterior circulation stroke appear to have a higher chance of poor neurological outcome and increased mortality. This large, multicenter, and retrospective study collected a substantial amount of valuable demographic, procedural, and therapeutic variables. Although the question of how anesthetic management impacts outcomes in acute ischemic stroke patients undergoing intra-arterial therapy is clinically relevant, additional scientific rigor in data analysis should be applied to achieve valid results.

The authors report the impact of anesthetic management on stroke outcome, but actually assessed anesthetic management only as 1 of a series of cofactors that they found to be associated with outcome. To truly assess any impact that anesthetic management has on patient outcomes, a comparison of demographic, procedural, and therapeutic variables between conscious sedation and general anesthesia would have been more relevant to this analysis instead of their Table 2.1 The authors do state a univariate analysis and subsequent binary regression were performed for variables, such as National Institutes of Health Stroke Severity score, in comparing patients placed under general anesthesia vs conscious sedation, but they do not fully report the variables compared or the statistical results of their univariate and multivariate analyses. Furthermore, some additional confounders, such as duration of inadequate cerebral perfusion pressure, hyperthermia and hyperglycemia, have not been considered in this analysis, thereby weakening the conclusion. Propensity score matching for these confounders may show that there are more important cofactors than the anesthesia type itself.

Even if all additional confounders had been considered and reported, a perfectly executed regression model does not necessarily shield from erroneous conclusions. Logistic regressions have limitations in that randomly chosen outcomes and variables can appear to have a statistically significant probability value by chance alone.2 Thus, caution should be used in applying the study’s results to avoid falsely condemning general anesthesia. For example, great attention must always be given in selecting appropriate candidates for conscious sedation. Conscious sedation can be unsafe in patients with risk factors for aspiration, including an inability to protect their airway, or in patients with aphasia, attention neglect, or disinhibition. Possible benefits of a hemodynamically stable general anesthesia, including patient comfort, immobility, and cerebral protection, should also be considered.3 We urge the readers to consider that it is more important to examine the role of the confounders associated with general anesthesia, rather than condemning general anesthesia, in the care of these patients receiving emergency care. We strongly agree with the authors that the question of optimal anesthetic management in appropriate patients remains unresolved until a well-designed prospective, randomized, assessor-blinded, controlled trial is undertaken, preferably with stratification of the randomization to anesthesia group assignments by National Institutes of Health Stroke Severity scale, which is the major confounder identified by the authors. Until this is accomplished, we must remember, “statistics are no substitute for judgment.”4

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