

Is ASA Classification a Valid Prognosticator in Octogenarians? Probably not

Ognjen Visnjevac and Nader D Nader*

Department of Anesthesiology, University at Buffalo, Buffalo, NY, USA

Abstract

Assessment of the state of health prior to surgery is the main responsibility of an anesthesiologist. The American Society of Anesthesiologists (ASA) has long adopted a grading system to classify the general health status of the patients preoperatively. Although the basis of this classification is very crude, it has been strongly associated with the outcome of the patients after surgery. However, as the population grows older, octogenarians are making a larger portion of our community. Majority of the patients in this age group suffer from chronic medical conditions and therefore, ASA classification categorizes them as ASA3 physical status. This classification significantly limits the ability to predict the clinical postoperative outcome in this growing group of population. This commentary is basically reviewing a need for additional tools or further modification of ASA classification that may help the anesthesia clinicians to identify the higher risk population.

Keywords: Preoperative testing; Guideline use; Practice improvement

Commentary

In the United States 2010 Preliminary National Vital Statistics Report, life expectancy is estimated to be 8.2 years for 80-year-old males, 9.7 years for 80-year-old females, 4.1 years for 90-year-old males, and 4.9 years for 90-year-old females [1]. These years are neither insignificant in number nor quality of life. As anesthesiologists, it is our duty to ensure optimization of preoperative medical conditions and postoperative outcomes. This duty is perhaps even more pronounced in this fragile and often dependent octogenarian population. To efficiently fulfill this duty, each anesthesiologist needs a simple yet robust risk stratification system that has been shown to be a good predictor of outcomes.

The most common method of risk stratification is the use of the American Society of Anesthesiologists (ASA) physical status classification system, initially proposed in 1941 by Sakla, modified in 1961 by Dripps et al and subsequently validated [2-4]. This routine clinical, 6-class, formula-free system has the distinct advantages of simplicity and ease of implementation, but often fails to provide useful risk stratification in the octogenarian population as the majority of this population is often classified as ASA III. Data from the Veterans Affairs Western New York Medical Center (1612 octogenarian surgical patients over a 10-year period) show that 65.1% of patients were classified as ASA III, significantly reducing the utility of our profession's revered classification system for this often-fragile group of patients. Similar limitations have been reported in vascular surgery patients, with 77% of patients being classified as ASA III [5].

A subclassification to divide the ASA III class into IIIA and IIIB has been proposed based on functional status, whereby IIIA represents patients who are fully functionally independent and IIIB represents patients with at least some functional dependence. Applying this sub classification to ASA III vascular surgery patients showed a 28% mortality difference between subclasses at 12-months postoperatively. Applied to the octogenarian patients at the Veterans Affairs system, this sub classification also yielded wide statistically significant divergence in mortality between functionally independent and functionally dependent patients, both in the short and long term. Yet, is functional capacity part of the current ASA classification system? Is it a mild

systemic disease? Is it a severe systemic disease? Does it cause constant threat of life? No. The answer to all four questions is, "no." Although mild and severe systemic diseases can cause functional incapacitation, each patient's functional status is not considered into the current definition of the ASA classification system. In fact, acknowledging that 65% of octogenarian patients may be classified as ASA III, without consideration for functional capacity, no clinician would have the means of differentiating between ASA III patients or performing the most central of anesthesiologists' tasks: risk stratification.

Some might argue that more robust, data-driven risk stratification formulas should be implemented and utilized [6,7]. They point to laboratory values like albumin concentration, note greater risk with greater patient age, and implement type of surgery, among other variables, as items in one of several risk stratification algorithms. It is true; albumin concentration has been repeatedly shown to be a predictor of survival, a finding evident among the Veteran octogenarian population and reported in other older populations [8]. Laboratory values and diagnostic tests are not always available, however, potentially limiting clinicians reliant on such formulas or algorithms. A crude, but generally accepted as adequate, assessment of functional capacity takes little more than a few minutes of conversation to assess patient history, mobility, and limitations.

As functional capacity (a direct summary measure of physical and mental fitness) and albumin concentration (a marker of metabolic and nutritional balance) have been repeatedly shown to be strong predictors of postoperative outcomes, perhaps these factors should become the focus of future perioperative research as they may be potential modifiable risk factors. It is unclear whether subpopulations

*Corresponding author: Nader D Nader, Professor of Anesthesiology, University at Buffalo, 3495 Bailey Ave, Buffalo, NY 14215, VAMC, USA, Tel: (716) 862-8707; Fax: (716) 862-6723; E-mail: nnader@buffalo.edu

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of functionally dependent octogenarian patients for whom preoperative functional capacity might be improved exist. In such subpopulations, it is not known if any potential improvement in preoperative functional status would indeed translate to improvements in postoperative outcomes, warranting investigation. Similarly, it is unclear whether preoperative nutritional adjustment or physical therapy might result in improvements in postoperative outcomes by improving metabolic nutritional balance (albumin level) and/or functional capacity.

Despite the plethora of suggested pre- and postoperative variables clinicians might use to plug into perioperative risk stratification formulas, the ASA classification retains simplicity and ease of implementation, without reliance on laboratory or diagnostic data, and remains the most routinely used risk stratification system in the preoperative period. Not only is it part of a standard of care of practice, but the ASA system has been found to strongly correlate with outcomes in an analysis of National Surgical Quality Improvement Program data [9]. Notwithstanding its high correlation with outcomes, however, this system is limited to six classes of patients and continues to be persistently inadequate when the majority of a population falls into one (or two) ASA classes, as it the case with octogenarian populations. Thus, sub classification for the older population based on functional capacity is likely to provide both patient and clinician with a valuable upgrade to this most ubiquitously used risk stratification tool-the ASA physical status classification.

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