Anaphylaxis Incidence with Rocuronium, Succinylcholine, and Atracurium: How Risk Communication Can Influence Behavior

To the Editor:

Reddy et al.6 studying neuromuscular-blocking drug (NMBD)-induced perioperative anaphylaxis concluded that “the rate of anaphylaxis to succinylcholine and rocuronium is approximately 10-fold higher than to atracurium.” However, we believe that major methodological issues should be highlighted in this article as the authors’ resulting statement might mislead clinical care.

First, a small series including 21 cases of NMBD-induced allergic anaphylaxis among 89 patients who were referred to the Anesthetic Allergy Clinic during a 7-yr study period was presented, but NMBD-induced anaphylaxis was not proven in 9 of these 21 reported cases (42.8%) as skin tests remained negative to the culprit NMBD. Except in one case (patient 9 with mastocytosis), the negative skin tests to the culprit NMBD in the eight remaining cases including succinylcholine (n = 2), rocuronium (n = 4), and atracurium (n = 2) may be explained by false-negative results as follows. Only intradermal tests (IDTs) to NMBDs were performed, whereas optimal investigation of drugs should be performed by prick-tests followed by IDTs without exceeding the maximal concentrations. Accordingly, IDTs are more sensitive but less specific than prick-tests.2–7 In addition, lower concentrations of NMBDs, that is, up to 100-fold lower, were used than those currently recommended in Europe8 and in France,7 explaining that one patient (patient 21) experienced further anaphylaxis on reexposure to atracurium despite negative skin tests to atracurium. Anaphylaxis to NMBD after negative skin testing has been previously reported by Fisher et al.8 and Fraser and Smart10 using the same drug dilutions (n = 2). The claim that “the rate of anaphylaxis to succinylcholine and rocuronium is approximately 10-fold higher than to atracurium” should therefore be softened because this has not been proved while one should keep in mind that all NMBDs may elicit anaphylaxis.4

Besides, effective risk communication must take into account how various publics perceive risk influenced by societal and cultural factors rather than just focusing on science.13 The last French survey of anesthesia-related mortality demonstrated that 3% of anesthesia-related deaths involved either NMBDs-induced or antibiotics-induced anaphylaxis, whereas 20% were due to pulmonary aspiration in 1999.14 The analysis of aspiration-related deaths in surgical patients with known full stomach (26 cases) showed significant deviations from standard practices. Particularly, succinylcholine was not used by French anesthetists in two third of these patients. The expert panel suggested that the most common interpretation of this limited use of succinylcholine may be explained by the fear of the risk of succinylcholine-induced anaphylaxis largely publicized in France since the 1980s.15 Thus, the risk communication on NMBD-induced anaphylaxis brought to the foreground a more severe adverse event such as pulmonary aspiration. This emphasizes the complicated process of disseminating risk messages.

In conclusion, the statement that “anaphylaxis is more common with rocuronium and succinylcholine than with atracurium” has not yet been proven and we believe that such a message is hazardous because it may have deleterious influences on anesthetists’ behavior.

Competing Interests

Dr. Dewachter received symposium and lecture travel fees from MSD France, Courbevoie, France. Dr. Mouton-Faitre declares no competing interests.

This letter was sent to the author of the original article referenced above, who declined to respond.
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(Accepted for publication May 14, 2015.)