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Letters to the editor

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RE: Takaya et al. Optimum priming dose of vecuronium for tracheal intubation. *J Anesth* (1996) 10:244–247

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To the editor: On reading the paper by Takaya et al. [1], I was surprised to see that references to the publications of Professor Francis F. Foldes had been omitted. The acceleration of the onset of the neuromuscular effect of a muscle relaxant, atracurium, was first noted by Gergis et al. in 1983 [2]. It was Professor Foldes, however, who coined the term "priming" and who elucidated the pharmacological background and described the technique of priming in 1984 [3]. The technique of priming was subsequently described in greater detail and the results obtained were reported by Professor Foldes [4] and his associates [5] in 1985. In 1993, Professor Foldes published a review article [6] summarizing the experiences reported with priming. None of these important papers were mentioned by Dr. Takaya and his associates. To me, omitting references to Professor Foldes' seminal work on priming is like discussing gravity without mentioning Sir Isaac Newton.

I would also like to make a few factual observations. According to Professor Foldes [4–6], the goals of priming are (1) reduction of the time interval between the administration of the second, "intubating" dose of muscle relaxant and the development of satisfactory conditions for tracheal intubation, thereby reducing the length of time during which the patient is exposed to the dangers of aspiration of stomach contents and obstruction of the upper airway; (2) reduction of the clinical duration of the intubating dose, thereby increasing the control of the anesthesiologist of the time course of the muscle relaxants; and (3) recognition of any hypersensitivity of the patient to muscle relaxants. The technique suggested by Takaya did not cause any clinically significant decrease in the mean onset time of 0.15 $mg \cdot kg^{-1}$ vecuronium, administered in a single bolus, about 2.3 min, or in two increments of 0.0075 $mg \cdot kg^{-1}$ and 0.1425 $mg \cdot kg^{-1}$, about 2 min. It does not seem to be worth while to go through the process of priming in order to decrease the onset time by 18 (about 13%). The total initial dose of 0.15 $mg \cdot kg^{-1}$ vecuronium can be expected to have a clinical duration of about 40 min [7]. This might be a disadvantage in anesthesia for short surgical procedures. Most critics of the priming principle (for reference see [6]) emphasize the necessity of keeping the priming dose low, thereby avoiding the occurrence of unpleasant symptoms, such as ptosis, double vision, swallowing difficulties, or respiratory embarrassment, in the conscious patient. In the original description of the priming technique, Foldes and his associates recommended deep sedation, including the use of the ataractic drug droperidol, a potent antiemetic, topical anesthesia of the mouth and pharynx, insertion of an oropharyngeal airway, administration of O2 or N_2O–O2 by face mask, and continuous observation of the patient's respiratory tidal volume. They also suggested that the patient should not be aroused and questioned about unpleasant symptoms during the time interval between the administration of the priming dose and the induction of anesthesia. In patients hypersensitive to muscle relaxants because of unrecognized pathology (e.g., myasthenia gravis, carcinomatous neuropathy) or because of some unexplained cause observed in a few percent of patients [8], even 0.0075 $mg \cdot kg^{-1}$ vecuronium will produce respiratory depression. These cases of unexpected hypersensitivity to muscle relaxants can be promptly recognized by the originally recommended technique of priming, and the management of anesthesia can be adjusted accordingly. It is too bad that many investigators have disregarded the adage "If it works, don't fix it" and have changed the technique of priming without gaining experience with the originally recommended technique.

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Rapid opioid detoxification under general anesthesia

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To the editor: Rapid opioid detoxification is a new approach for the treatment of the opioid addict. Originally developed by Legerda at CITA (*C*enter for *I*nvestigation and *T*reatment of *A*ddiction) [1], this new method of opiate detoxification under the CITA protocol became available for the first time in the United States at the Metropolitan Hospital Center in New York.

Traditionally, detoxification of the opioid-dependent patient has been accomplished slowly over a period of a week or more by transferring the addict to an equipotent dose of methadone, then decreasing the methadone dose gradually. Methadone decreases the discomfort of withdrawal but makes the period of withdrawal much longer [2,3]. The rapid detoxification method was developed to minimize this period of discomfort. In Metropolitan Hospital, this detoxification takes only 24 h under the CITA protocol.

Rapid antagonism of opioids by naloxone or naltrexone results in severe withdrawal symptoms [2,4]. The withdrawal syndrome is minimized by the CITA protocol using general anesthesia in an intensive care unit setting. The anesthesiologist is best suited to manage this detoxification, because it requires the skills of screening patients for general anesthesia, cardiovascular and respiratory monitoring, and pain management, as well as the ability to manage the accompanying withdrawal symptoms.

In the Metropolitan Hospital Center, board-certified anesthesiologists care for these patients during the entire detoxification period. Space in the recovery room has been specifically designated for this program, with four anesthesia machines, monitors, and a trained nursing staff with experience in both psychiatry and critical care.

Liver function tests, ECG, chest X-ray, and psychiatric evaluation are performed on all patients before admission. The patient comes to the hospital on the morning of the detoxification. Because of the effect of opioids on gastric emptying, the patients are regarded as having a full stomach, and therefore intubation is mandatory. A light plane of general anesthesia is induced, which does not completely mask the physiological response to opioid withdrawal. The withdrawal symptoms may be shortened or diminished under general anesthesia. It has been previously reported that during deep barbiturate anesthesia, administration of 10 mg naloxone to an opioid addict produces no significant changes in the hemodynamic parameters of heart rate, mean arterial pressure, cardiac index, or peripheral vascular resistance, or in oxygen saturation [5]. We use clonidine to blunt the cardiovascular effects and to make awakening as comfortable as possible [3,4].

Premedication is started with clonidine, titrated to heart rate and blood pressure to the lower margin of the normal range. Then induction is performed with propofol. After intubation, continuous infusion of propofol is maintained. Naltrexone is given incrementally to antagonize opioids. It produces withdrawal symptoms, such as piloerection, pupillary dilatation, and myoclonus. The withdrawal syndrome itself is of very short duration, and the antagonizing opiate cycle is repeated until the disappearance of the withdrawal symptoms with naloxone. This naloxone challenge test is performed before waking the patient to prove that there is no more opioids in the patient's body.

Since the start of this method on August 26, 1996, 85 patients have been treated. The results to date have been very promising. All patients have passed the naloxone challenge test and awaken without a craving for narcotics. However, the standard of success in addiction therapy is a drug-free interval of 6 months. This population will be carefully reevaluated after this period to assess the success of the method.

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