

Anesthesiology
1997; 86:506
© 1997 American Society of Anesthesiologists, Inc.
Lippincott-Raven Publishers

Intramuscular Rocuronium

To the Editor:—The recent article by Reynolds *et al.*¹ describing intubating conditions after intramuscular rocuronium raises two issues.

First, the aim of this study was to develop a technique to facilitate tracheal intubation for children in whom intravenous access is not immediately available. However, we question the use of an intermediate-acting muscle relaxant in a nonemergent situation because, by the time one deals (unsuccessfully) with the difficult intravenous access, the child will be sufficiently anesthetized with the volatile anesthetic to permit tracheal intubation without muscle relaxation.

Second, using a muscle relaxant with a relatively prolonged duration of action in a patient without intravenous access can put the patient at danger if a complication (difficult airway, bradycardia, hypoxia, *etc.*) occurs. Therefore, we suggest using intramuscular rocuronium in emergency situations (*e.g.*, laryngospasm) in patients in whom succinylcholine might be contraindicated, keeping in mind that the patient will be paralyzed for 60–90 min.

Finally, an aspect that needs comment is the reaction to injection of rocuronium. The authors state that injection of intramuscular rocuronium “. . . elicited vigorous movement (*e.g.*, extremity movement against gravity) in 50% of patients . . .” and attributed this to light anesthesia. One would expect less reaction to pain only from a minor stimulus such as an intramuscular injection during 1 MAC of halothane anesthesia. Recently, however, rocuronium has been reported to cause pain after intravenous injection.^{2,3} Fifty-two percent of patients to whom a subparalyzing dose of rocuronium had been administered complained of pain; of these, 12% experienced severe pain.² Therefore, some

intrinsic irritating property of rocuronium causing pain on injection rather than the “light” anesthesia may be the cause of the reaction described.

Peter Szmuk, M.D.

Visiting Assistant Professor

Adriana Radulescu, M.D.

Resident in Anesthesiology

Department of Anesthesiology

The University of Texas, Houston Medical School

6431 Fannin, MSB 5.020

Houston, Texas 77030

Tiberiu Ezri, M.D.

Head, Postoperative Care Unit

Daniel Geva, M.D.

Chairman

Department of Anesthesiology

Kaplan Hospital

Rehovot, ISRAEL

Reference

1. Reynolds LM, Lau M, Brown R, Luks A, Fisher DM: Intramuscular rocuronium in infants and children: Dose-ranging and tracheal intubating conditions. *ANESTHESIOLOGY* 1996; 85:231–9
2. Moorthy SS, Dierdorf SF: Pain on injection of rocuronium. *Anesth Analg* 1995; 80:1067
3. Steegers MAH, Robertson EN: Pain on injection of rocuronium bromide. *Anesth Analg* 1996; 83:203

(Accepted for publication November 11, 1996.)

Anesthesiology
1997; 86:506–7
© 1997 American Society of Anesthesiologists, Inc.
Lippincott-Raven Publishers

In Reply:—Szmuk *et al.* question use of an intermediate-acting muscle relaxant in a nonemergent situation. Our experience, from visiting many hospitals in the United States, is that it is common practice to administer succinylcholine intramuscularly to children before tracheal intubation, presumably to avoid giving excessive doses of inhaled anesthetics, and thereby avoiding hypotension. In light of recent concerns about succinylcholine's adverse effects, our technique offers clinicians an alternative.

Szmuk *et al.* argue that muscle relaxants with prolonged action “can put the patient at danger if a complication occurs”. If the ability to ventilate *via* facemask is compromised (and this can presumably be assessed before muscle relaxants are given, whether by the intrave-

nous or intramuscular route), then both succinylcholine and nondepolarizing muscle relaxants might lead to the complications suggested by Szmuk *et al.*

Szmuk *et al.* then advocate that a possible indication for intramuscular rocuronium is to treat laryngospasm. In the absence of data examining the time course of rocuronium at the vocal cords, we stated previously that our “study provides no insight into the potential for treatment of laryngospasm with IM rocuronium.” A study to compare the time course of intramuscular rocuronium and succinylcholine at the vocal cords is in progress; pending the results of that study, we continue to advocate intramuscular administration of rocuronium only in nonemergent situations.