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The use of modified rapid sequence induction in the pediatric population: a survey of current practice.

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Introduction: Rapid sequence induction (RSI) is a well-established practice in anesthesia**,** but is not without possible risks to the patient. In different situations, a modification of the standard RSI technique may be more appropriate. However, the definition of a modified rapid sequence induction (MRSI) is not well documented. Considerable variation may exist among anesthesia providers related to the use of this technique. The purpose of this study was to determine the working definition of MRSI, as well as the frequency of its use by pediatric anesthesiologists in clinical practice.

Materials and Methods: This descriptive study consisted of a survey of pediatric anesthesiologists who have completed training and are active members of the Society for Pediatric Anesthesia. The survey included basic questions related to the anesthesiologist's experience, practice setting and the use of MRSI. Responses were compiled and analyzed to identify the frequency, technique, perceived indications and complications of use of MRSI in children.

Results: The mean ± SD years in practice of the 228 respondents was 14.9 ± 8.16 years, with pediatric patients comprising 77% ± 33% of their practice. 76.8 % completed a fellowship in pediatric anesthesia. 60 % of the respondent's practice setting was at a Children's Hospital. 65% of respondents defined a modified RSI as equivalent to a RSI, but with mask ventilation, 35% as equivalent to a RSI but with use of rocuronium instead of succinylcholine, 17% as equivalent to a regular intravenous induction but with cricoid pressure application, 8% as a regular mask induction with cricoid pressure application, 6.6% as a RSI with pre or coadministration of narcotics or benzodiazepines, 3% as a regular induction without assisted ventilation/oxygenation from time of apnea to laryngoscopy, 2.2% as a RSI without preoxygenation, 2.6% all of the above and 17% as other. 4.8% of respondent stated never using a modified RSI. The frequency of use of a MRSI is documented in Fig. 1. The choice of muscle relaxant is reported in Fig. 2. Indications of use of a MRSI were a concern about apnea time tolerance with traditional RSI in 74%, concern about muscular pathology if succinylcholine is used in 70%, and concern about airway difficulty in 44.2% of respondents . Complications upon using a MRSI were reported as none, desaturation, aspiration, difficulty in intubation associated with the induction technique and other in 48.8, 40.6, 12.4, 12 and 3.2 % of respondents, respectively. Most respondents somewhat agree that they consider that a RSI and a modified RSI offered a lower incidence of complications when compared to regular IV induction, in a pediatric patient at risk of aspiration.

Conclusion: Definition and technique of a MRSI vary amongst pediatric anesthesiologists. Rocuronium is the most used muscle relaxant for MRSI in a pediatric patient. Further attempts to obtain a consensus defining MRSI is needed to help anesthesiologists standardize the documentation of their clinical practice.

Fig. 1: Frequency of use of MRSI

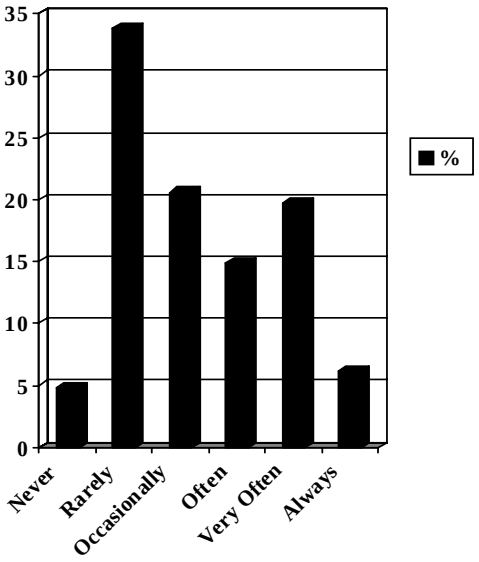

Fig. 2: Muscle Relaxant of choice