TITLE: EVALUATION OF VECURONIUM FOR RAPID SEQUENCE INDUCTION IN PATIENTS UNDERGOING CESAREAN SECTION

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Introduction. Vecuronium bromide is a potent neuromuscular blocking drug with an onset of 2-3 minutes and a duration of action 1/3-1/2 that of pancuronium. Strategies to shorten the onset time have included use of a larger intubating dose or use of the priming principle;[1,2] however, this has not been studied in patients undergoing cesarean section. We evaluated the neuromuscular blocking properties, neonatal effects, and safety of vecuronium in a rapid sequence induction for cesarean section.

Methods. We obtained institutional approval and informed consent to study 20 healthy women undergoing elective repeat cesarean section. Ten patients received 0.2 mg/kg vecuronium during induction, while ten patients received 0.01 mg/kg vecuronium as a priming dose followed in 4-6 minutes by 0.1 mg/kg vecuronium. All patients were induced with 3-4 mg/kg pentothal followed by oxygen/halothane/N_2O/morphine for maintenance of anesthesia. Measurements included onset time of neuromuscular block, changes in maternal O_2 saturation, intubating conditions, clinical duration, maternal and umbilical vein vecuronium levels, Apgar scores, umbilical cord gases, and neuroadaptive capacity scores (NACS) at one hour and 24 hours. Neuromuscular blockade was monitored with a peripheral nerve stimulator using 25% return to baseline twitch height as clinical duration recorded on a Gould strip chart recorder. Statistical comparisons were made using Student's t test for all data except Apgar scores and NAC's which were analyzed using a Fisher exact test. Differences were considered significant when $p < 0.05$.

Results. Onset time was similar in both groups (mean of 3.5 min in the priming group and 3 min in the 0.2 mg/kg group). In both groups intubation was accomplished within 2.7 minutes, before complete blockade, under excellent conditions. Oxygen saturation fell below 95% in 40% of patients in both groups, with mean time to fall in saturation being 140 seconds in the priming group (range 100-175s) and 144 seconds in the 0.2 mg/kg group (range 115-195s). Clinical duration was significantly longer in the 0.2 mg/kg group, 103.3 min vs. 71.3 min in the priming group, but all patients were easily reversed from 25% return of twitch. The two groups of infants did not differ significantly in terms of Apgar scores, umbilical cord blood gases, total NACs, or NACS test items evaluating passive and active tone. UV/MV blood levels are not completed at this time but will be presented.

Discussion. Vecuronium provided excellent intubating conditions in both doses prior to onset of complete blockade. Excellent intubating conditions have been found using vecuronium with only 40-60% blockade of the peripheral twitch response.[3] Any patient in whom O_2 saturation began to fall was immediately intubated without difficulty with rapid recovery of maternal O_2 saturation. Clinical duration exceeded operative time especially in the 0.2 mg/kg group. In the clinical setting earlier reversal could be accomplished before 25% return of twitch. Placental transfer has previously been measured at 11%.[4] Satisfactory neonatal status in both groups again indicates placental transfer is clinically insignificant even with the large dosages used in these patients. We conclude vecuronium bromide is an effective, safe alternative in rapid sequence induction for cesarean section when succinylcholine is contraindicated, however the clinician should be aware of the possibility of excessive clinical duration, especially using a 0.2 mg/kg dosage.

References.

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