Title: EFFECT OF SUCCINYLCHOLINE ON SUBSEQUENT NEUROMUSCULAR BLOCKADE WITH BW A938U

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Introduction. Previous studies have shown that prior administration of succinylcholine (SCh) potentiates the actions of the non-depolarizing neuromuscular blocking drugs pancuronium,[1] d-tubocurarine[2] and atracurium.[3] The purpose of this investigation was to evaluate the effect of succinylcholine (1.0 mg/kg) on the neuromuscular response to a subsequent dose of BW A938U, a new non-depolarizing muscle relaxant.

Methods. Eighteen patients of either sex (excluding females of child-bearing potential) ASA Class I or II, aged 18-59 years, weighing less than 100 kg were studied after obtaining institutionally approved informed consent. Patients were premedicated with morphine (0.10-0.15 mg/kg) and atropine (0.004-0.008 mg/kg) IM 45-60 minutes prior to the induction of anesthesia. Anesthesia was induced with fentanyl (1-2 μg/kg) and thiopental (4-10 mg/kg) IV and maintained with 70% nitrous oxide in oxygen. Additional fentanyl and thiopental were administered as clinically indicated. Ventilation was controlled to maintain the end tidal CO_2 at 35-40 mmHg (Perkin-Elmer mass spectrometer).

After establishing a stable level of anesthesia the twitch response of the adductor pollicis muscle to ulnar nerve stimulation was elicted by supramaximal square wave pulses of 0.2 msec duration at a frequency of 0.15 Hz quantitated on an FT10 transducer.

After determining the baseline neuromuscular response, patients were divided into two groups. Group A received BW A938U (0.023 mg/kg) as an IV bolus administered over 5-10 seconds. Group B first received SCh (1.0 mg/kg). Following 95% recovery from the neuromuscular blockade that followed administration of SCh, the patients in Group B received BW A938U (0.023 mg/kg).

The ECG, heart rate, intra-arterial blood pressure and the twitch response were monitored and recorded throughout the study. The twitch recording was analyzed for onset time of maximal block, magnitude of maximal block and duration of block from injection to 5%, 25%, 50%, 75% and 95% recovery of control twitch height. The results were analyzed using Student "t"-test. Data are expressed as mean ± S.D.

Results. The results are displayed in Tables 1 and 2.

Discussion. Prior administration of SCh appears to potentiate the action of BW A938U. Although the degree of neuromuscular blockade produced by BW A938U was not significantly increased following the use of SCh, the time to maximum block was decreased and recovery of neuromuscular function was delayed. These results are consistent with other studies evaluating the interaction between depolarizing and non-depolarizing relaxants.[1,3] Although the underlying mechanism of the interaction is not understood, the magnitude of the changes produced in the BW A938U non-depolarizing block by the prior administration of succinylcholine are clinically significant and similar to the changes seen with other non-depolarizing neuromuscular blocking drugs.

References.

1. Katz RL: Modification of the action of pancuronium by succinylcholine and halothane. Anesthesiology 35:602, 1971
2. Katz RL, Norman J, Seed RF, Conrad L: A comparison of the effects of suxamethonium and tubocurarine in patients in London and New York. Br J Anaesth 41:1041, 1969
3. Stirt JA, Katz RL, Murray AL, Schehland DL, Lee C: Modification of atracurium blockade by halothane and by suxamethonium. Br J Anaesth 55:71S, 1983

Table 1. Degree of neuromuscular blockade and time to maximum block following BW A938U.

	Maximum % Block	Time to Max. Block (minutes)
Group A (BW A938U)	92.4±10.0	10.3±3.4
Group B (SCh+BW A938U)	91.4±12.9	7.6±1.3*

*P < 0.05

Table 2. Time to recovery from neuromuscular blockade with BW A938U.

	Inj. to 95% Recovery (minutes)
Group A (BW A938U)	73.7±26.1
Group B (SCh+BW A938U)	104.9±38.9*

*P < 0.05