TITLE: A STUDY OF VENCURONIUM PROPOFOL INTERACTION

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Experimental studies with the intravenous anesthetic propofol (in Cremophor EL) suggested it potentiated vecuronium[1]. The present study was designed to assess this interaction in man.

Sixty-eight adult patients were included in the study after obtaining their informed consent and approval from the Research Ethical Committee. They were randomly allocated to be anesthetised either with a continuous propofol infusion (propofol) or thiopental, nitrous oxide/oxygen and fentanyl (control). The force of contraction of the adductor pollicis was recorded following stimulation of the ulnar nerve with supramaximal stimuli at 0.1 Hz. In the first part of the study, eight patients from each group received 20, 30 or 40 µg/kg of vecuronium. Maximum block was measured, dose response curves constructed after arc-sine transformation of the data, and the ED95 calculated. In the second part of the study, 80 µg/kg of vecuronium (approximately 2xED95) was given to ten patients from each group as a single bolus to determine the onset and the duration of block.

Analysis of variance and t-tests were used to assess the statistical significance. There were no significant demographic differences between the groups used to determine the ED95, or in onset/duration. The results are shown in Table 1.

Table 1: Neuromuscular Blocking Effect of Vecuronium

	Propofol	Control
ED95 µg/kg	41.3	39.4
Time to max block of 80 µg/kg (min)	3.6 (1.2)	4.1 (1.7)
Time to 25% recovery (min)	28.3 (6.6)	28.1 (9.8)
Recovery index (min)	15.5 (8.2)	15.4 (11.9)

The ED95 of vecuronium was not significantly different between the two anesthetic techniques and was similar to that reported previously[2]. There were no significant differences in the time to onset of maximum block, the recovery of the twitch to 25% or the recovery index (time for 25-75% recovery). Within the power of this study, it is concluded that the emulsion formulation of propofol does not have any significant effect on the neuromuscular blocking effect of vecuronium in man.

References:

1. Br J Anaesth 55: 433-436, 1983.
2. Br J Anaesth 57: 1060-1062, 1985.

TITLE: DOES CYCLOSPORIN A POTENTIATE THE EFFECT OF NEUROMUSCULAR BLOCKING AGENTS IN VITRO ?

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Cyclosporin A (CsA) a new immunosupressive agent, is now being widely used to prevent graft rejection after organ transplantation. Potentation of the neuromuscular blocking agents by CsA was decribed in cats [1] and humans [2]. The aim of our investigation was therefore to study the effects CsA on vecuronium (Vec) and atracurium (Atra) induced neuromuscular blockade in vitro using the standard rat hemidiaphragma- phenic nerve preparation [3].

After approval by the local Comittee on animal research the dose response relationship of Atra and Vec was investigated in diaphragmas of untreated (control) rats . In the second part of the study rats were pretreated with CsA 2.5 or 7.5 mg/kg i.m.for eight consecutive day for subsequent studies with Vec or Vec and Atra (n= 6 each), respectively.

Calculated ED_{25}, ED_{50} and ED_{75} from dose response curves of Atra did not differ in both parts of this study. The ED_{75} of Vec was significantly decreased in hemidiaphragmas of rats receiving 7.5 mg/kg CsA i.m. All other values for Vec did not differ from the values derived from part one.

Long term administration of CsA may influence the neuromuscular junction and change calcium metabolism of the muscle. The possibility of an increased sensibility to neuromuscular blocking agents under chronic CsA treatment are indicated in the finding, that the ED_{75} of Vec is significantly reduced in diaphragmas of rat with toxic CsA blood levels.

References :

1) Gramstad L: Brit. J. Anaesth. 1986, 58: 1149-1155
2) Crosby E: Can. J. Anaesth, 1988, 35: 300-302
3) Foldes F: Anesthesiology 1969,31: 522

ED25, ED50 and ED75 values for Vec and Atra of control rats and rats treated with Ciclosporin i.m.