

Title: INTRAOCULAR PRESSURE EFFECTS OF COMBINATION PANCURONIUM/METOCURINE

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Introduction. Prevention of an increase in intraocular pressure (IOP) is important during induction and maintenance of anesthesia in patients with open-eye injuries, or patients for open-eye surgical procedures. No technique, including pretreatment with non-depolarizing muscle relaxants, reliably prevents succinylcholine-induced increases in IOP.¹ In contrast, an intubating dose of pancuronium slightly reduces IOP but may produce muscle relaxation which outlasts surgical needs.² The administration of reduced doses of pancuronium and metocurine, in combination, permits an onset of intubating conditions comparable to that with pancuronium, but with a somewhat reduced duration of neuromuscular block.³ If IOP is maintained or reduced by administration of this relaxant combination, then a therapeutic advantage may be gained. The goals of this study were to determine in anesthetized humans: 1) the IOP response following administration of pancuronium and metocurine, in combination, and 2) the IOP response to subsequent intubation.

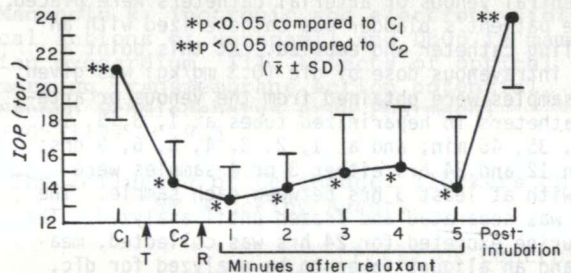
Methods. Eight unpremedicated, adult patients, ASA class I-III, undergoing elective surgery gave informed consent for the study. Anesthesia was induced and maintained with intermittent intravenous injections of sodium thiopental. Ventilation was assisted with 100% O₂ by mask. Using applanation tonometry, control measurements of IOP were determined prior to induction of general anesthesia (C₁), and immediately after induction of anesthesia (C₂). IOP was again measured at 1 minute intervals for 5 minutes after the simultaneous intravenous administration of pancuronium, 0.02mg/kg, and metocurine, 0.08mg/kg. Following adequate muscle relaxation, the tracheas of all patients were intubated with IOP redetermined 15 seconds post-intubation. Blood pressure was recorded at the same measurement periods. Statistical significance of changes from control for IOP and mean blood pressure at each time period was determined by Student's t test for paired data.

Results. As is seen in the figure, thiopental (T) administration significantly reduced IOP from awake values (C₂ versus C₁). Administration of the non-depolarizing relaxant combination (R) produced no change from C₂ values. Endotracheal intubation, accomplished approximately 7 minutes following relaxant administration

resulted in a dramatic increase in IOP from pre-intubation values, but produced no significant change from awake IOP (C₁). As shown in the table, grouped mean blood pressure (\overline{BP}) was insignificantly reduced by thiopental and unchanged following administration of the muscle relaxant combination. Fifteen seconds after intubation, mean blood pressure was significantly increased from baseline anesthesia level (C₂) but insignificantly increased from awake values (C₁).

TABLE

	Min. after relaxant							Post-Intub.
	C ₁	C ₂	1	2	3	4	5	
\overline{BP} (torr)	93	87	93	92	93	92	93	108**



Discussion/Conclusions. IOP is reduced by thiopental and unchanged by combination pancuronium/metocurine in the dose studied. Administration of these relaxants in combination produces intubating conditions as rapidly as a comparable conventional dose of pancuronium alone, but produces shorter duration of neuromuscular block. Thus, until newer short-acting, non-depolarizing relaxants are clinically available and proven not to increase IOP, the relaxant combination tested is an attractive alternative for producing neuromuscular block in patients where elevations in IOP must be prevented. The sudden increase of IOP during intubation is troubling and may be partly explained by the simultaneous increase in blood pressure.

References

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