26411 - THE DURATION OF PROPOFOL APPLICATION BEFORE MIVACURIUM DETERMINES ITS POTENCY

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INTRODUCTION. One recent study showed that the longer the duration of propofol anesthesia without NMB, the more profound the peak effect of a muscle relaxant. (1) The focus of this study is the determination of the mivacurium potency at the adductor pollicis muscle (AP) after 5 or 20 min of total intravenous (TIVA) propofol anesthesia.

METHODS. Twenty patients undergoing surgery of the lower extremities was randomized in two groups of 10 patients each. A laryngeal mask was inserted without aid of neuromuscular blockade (NMB). General anesthesia was maintained as intermittent positive pressure ventilation (without nitrous oxide) using propofol to maintain a bispectral index between 40 and 50. Mivacurium potency was determined by applying 60 µg/kg (first dose), followed every 2 min by increments of 30 µg/kg until complete NMB (as determined using phonomyography at the AP). ED50 and ED95 were calculated using linear regression of a logit transformation of the evoked acoustic signal heights and compared between the two groups (5 min or 20 min of anesthesia) using t-test, $P < 0.05$.

RESULTS. Preliminary results of 14 patients (7 patients each, no difference in weight or age) ED50 and ED95 are shown in table 1 and are statistically significantly lower after 20 min of anesthesia.

DISCUSSION. The potency of mivacurium is 1.5 fold after 20 min of propofol anesthesia in comparison to 5 min of anesthesia. These findings have an influence on the clinical application of muscle relaxants, especially in LMA-based IPPV where often NMB is not always necessary at the beginning of surgery but muscle relaxants might be necessary at a later state of surgery. Future studies have to determine whether this is a direct effect of anesthesia as such, e.g. a 'central' effect, or propofol-related, similarly to direct muscle relaxation by volatile anesthetics.

Table 1 ED₅₀ and ED₉₅ for mivacurium after 5 or 20 min of TIVA with propofol

Adductor pollicis	Groups	ED 50 (µg/kg)	ED 95 (µg/kg)
	5 min (n, SD)	76 (12)	148 (28)
	20 min (n, SD)	51 (8)*	98 (14)*

*, P<0.05