INTERACTION OF KETAMINE WITH ATRACURIUM

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Johnston and colleagues [1] found that ketamine potentiates neuromuscular blockade produced by tubocurarine, but not that produced by pancuronium or suxamethonium. The present study was designed to determine the effect on the block produced by atracurium.

METHODS AND RESULTS

Forty-six ASA class I or II patients scheduled for gynaecological surgery were allocated at random to a ketamine or a control group, after local Ethics Committee approval and informed consent were received. Exclusion criteria included arterial hypertension, mental disturbance and diseases or drugs which might interfere with neuromuscular transmission.

The patients were premedicated with 50 mg of dixyrazine (a phenothiazine derivative), given by mouth the night before surgery.

Anaesthesia was induced with midazolam 0.2 mg kg⁻¹, fentanyl 7 μg kg⁻¹ and atropine 0.5 mg i.v., and maintained with fentanyl and 66% nitrous oxide in oxygen.

The ulnar nerve was stimulated supra-maximally at the wrist through surface electrodes, and the force of contraction of the adductor pollicis was recorded using a force-displacement transducer (TD 100, Biometer, Denmark), with a resting load of 200–300 g. The stimuli applied were square waves of 0.2 ms duration, at 0.1 Hz (Myotest, Biometer, Denmark). The output of the transducer was recorded on a Myograph 2000 (Biometer, Denmark). Following a period of at least 10 min to allow stabilization of the twitch response, the patients in the ketamine group received ketamine 2 mg kg⁻¹ i.v. followed by an infusion of 2 mg kg⁻¹ h⁻¹. Atracurium 0.5 mg kg⁻¹ was injected i.v. and the time to 25% recovery of the twitch height was measured. It was 8.0 min longer in the ketamine group (P < 0.005), with a 95% confidence interval of from 2.3 to 11.8 min.

SUMMARY

The effect of ketamine on the duration of atracurium-induced neuromuscular blockade was studied in 40 healthy patients anaesthetized with midazolam, fentanyl and nitrous oxide. Twenty received, in addition, i.v. ketamine 2 mg kg⁻¹ followed by an infusion of 2 mg kg⁻¹ h⁻¹. Atracurium 0.5 mg kg⁻¹ was injected i.v. and the time to 25% recovery of the twitch height was measured. It was 8.0 min longer in the ketamine group (P < 0.005), with a 95% confidence interval of from 2.3 to 11.8 min.

Three patients in each group were withdrawn from the study because of various technical problems during the period of stabilization of the twitch response. The remaining two groups of 20 patients were similar with respect to age, weight and height.

The median (and 1st and 3rd quartile) duration of neuromuscular blockade was 38.2 (34.3–45.3) min in the control group, and 46.2 (43.6–48.6) min in the ketamine group (P < 0.005) (fig. 1).
The 95% confidence interval was from 2.3 to 11.8 min.

There were no differences between the groups with respect to arterial pressures, and central and peripheral temperatures.

In the period between injection of atracurium and 25% recovery of the twitch response, eight patients in the control group and two patients in the ketamine group needed supplementary fentanyl 0.1–0.3 mg (0.05 < P < 0.1).

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**REFERENCES**