EFFECTS OF CEFOXITIN ON NEUROMUSCULAR AND AUTONOMIC TRANSMISSION

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Antibiotics of the aminoglycoside, tetracycline, polymyxin and lincomycin groups can induce prolonged muscle paralysis in anaesthetic practice when used in combination with muscle relaxants and general anaesthetics (Pittinger & Adamson, 1972).

The effects of cefoxitin, a new cephamycin type antibiotic, have been tested on neuromuscular and autonomic transmission in the isolated chick biventer cervicis muscle and rat hemidiaphragm preparations, and in anaesthetized cats.

In the chick biventer cervicis muscle cefoxitin (50 mg/ml) produced only 5±2.4% (mean s.e.) and 16±5% decreases in responses to nerve stimulation and to added carbachol respectively. In the rat hemidiaphragm cefoxitin (20 mg/ml) had no significant effect on indirectly elicited twitches, but produced a 17±9% reversal when added during neuromuscular block of the preparation produced by tubocurarine.

In the anaesthetized cat, either alone or after pretreatment with a sub-neuromuscular blocking dose of tubocurarine (50 µg/kg), cefoxitin at doses up to 400 mg/kg had virtually no effects on responses of the tibialis anterior or soleus muscles to sciatic nerve stimulation, of the nictitating membrane to preganglionic stimulation, or of the heart rate to vagal stimulation. In some experiments, cefoxitin (400 mg/kg) when added during neuromuscular block induced by tubocurarine (200 µg/kg), pancuronium (10 µg/kg) or chandonium (50 µg/kg) produced a very slight reversal of the neuromuscular block. In all of the cat experiments cefoxitin (400 mg/kg) produced large (45-105 mmHg) but short-lived (30-60 sec) falls in systolic blood pressure.

From the experiments performed in this study cefoxitin appears to have almost negligible effects at the neuromuscular junction or in the parts of the autonomic nervous system studied. Thus, both in vivo and in vitro, extremely high concentrations were necessary to show even small effects. As it is unlikely that the concentrations used would be achieved in the bloodstream during the clinical use of the compound it is considered that neuromuscular block is unlikely to be an important side effect of cefoxitin.

Pittinger, C. & Adamson, R. (1972) An. Rev. Pharmac. 12, 169-184

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