

The Peculiarities of Myorelaxants Action in Smokers

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Abstract

In the given article the results of neuromuscular block monitoring in smokers patients are represented. The peculiarities of rocuronium bromide action in smokers are revealed. It is proved that smoking is statistically reliably increases the duration of rocuronium action.

Keywords: *Factors; Muscle Relaxants; Neuromuscular Block; Smoking; Operation*

Introduction

It has long been known that the duration of the action of muscle relaxants is affected by a variety of factors, and to a greater extent this effect is observed when using non-depolarizing muscle relaxants of medium and long duration [1-5]. Surprisingly, factors, influencing neuromuscular block, are not becoming the subject of scientific discussion and are not reflected in modern literature.

Research Purpose

To study the effect of smoking on the duration of action of rocuronium bromide at the laparoscopic cholecystectomy operation.

Research Methods and Materials

Patients were divided into two groups. 1 - a group of "smokers" who had been smoking more than 20 cigarettes a day for 10 years (n=20) and 2 - a group of "non-smokers" (n=20). In both groups, induction of general anaesthesia was carried out by the combination of intravenous injection of propofol in a dose 1.5 - 2.5 mg*kg⁻¹ of body mass and fentanyl in a dose of 5 - 15 mkg*kg⁻¹. Mioplegy - rocuronium in a dose 0,6 mg*kg⁻¹. The total intravenous anaesthesia with the use of propofol (6-4-2 mg*kg⁻¹*h⁻¹) and fentanyl 0,003 - 0,01 mkg*kg⁻¹*min⁻¹ was performed with all patients. The support of myorelaxation - rocuronium in a dose 0,15 mg*kg⁻¹ at the appearance of the first response to TOF-stimulation.

For the estimation of quality and peculiarities of neuromuscular block (NMB) the method of acceleromyography (ACC) with the use of monitors "TOP-Watch®S", "TOP-Watch®SX" was applied to the research.

With the help of ACC the optimal moment of trachea intubation and surgical block onset was taken into account as well as the control of deep NMB, the determination of injection time of additional relaxant dose and antidote dose, the determination of trachea intubation time were taken into account.

The two regimes of neurostimulation were used:

1. Single stimulation
2. "Four packages" stimulation of the peripheral nerve.

The appearance of the first TOF-response marked the onset of recovery phase. The TOF index from 0,9 was accounted the reflection of adequate recovery of neuromuscular function.

During the non-stop monitoring of NMB the rate of recovery of neuromuscular conduction had been calculated in each group:

1. From the injection of induction dose of non-depolarizing myorelaxant to the extubation;
2. From the appearance of the first muscular response to the extubation.

The duration of operation in both groups - $54,3 \pm 7,6$ minutes.

The duration of anaesthesia - $60,3 \pm 8,7$ minutes.

Results and Discussion

The time of NMB recovery from rocuronium induction dose to the appearance of the first TOF-response composed $43,4 \pm 3,6$ minutes in the 1st group and $33,3 \pm 3,6$ minutes in the 2nd group. The rate of NMB recovery from the appearance of the first muscular response to the extubation in a group of "smokers" composed $28,4 \pm 3,2$ minutes, in a group on "non-smokers" - $18,4 \pm 2,6$ minutes ($P < 0,01$).

The decurarization was reliably more often required in a first group (12 observations $P < 0,01$).

Conclusion

Thus, tobacco smoking increases the duration of rocuronium bromide action.

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