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VALUE OF THE ELECTROMYOGRAPHIC MONITORING IN THE REVERTION OF THE MUSCLE RELAXANTS

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ABSTRACT

Comparative EMG study of the revertion of the neuromuscular function after the use of three kinds of non-depolarizing muscle relaxants in sixty patients which were subclassified into three groups , of twenty patients were every one , for had been elective cholecystectomy. Indicating the use of anticholinesterasic drug (neostigmine) which must be used when the patients had been retired of equal or more than 50%of the control twitch height and would not be doing extubation till the height would be reaching more than 70% of the control. The use of anticholinesterases to reverse residual neuromuscular block is efficacious only if recovery is already established. It was originally advised that at least the second twitch (T2) of the train-of-four response should be detectable before neostigmine is administered [1]. Of aiming for preventing the incomplete revertion with the increasing mortality and morbidity[2]. and for preventing residual respiratory paralysis in the recovery wards.Even though neuromuscular blocking agents are an essential part of balanced anesthesia and the risks of residual paralysis are well documented, many anesthetists seldomly monitor neuromuscular block. Classical reversal agent neostigmine is unable to antagonise a deep neuromuscular block and is rather slow to antagonise even a moderate block [3]. Some always use a TOFratio monitor if available - the goal is a ratio of 0.9 - if i have a simple TOFcount machine - I wait for 4 responses and then antigonize [4]

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INTRODUCTION

10-17% of the anaesthtic mortality which were for respiratory failure in the immediate post-operative for incomplete revertion of the muscle relaxant (Goodman, 1986). Viby – morgangen, beemer and Rosenthal, demoster the frequent finding of signs of partial recurirazation in the recovery room (Yate, 1987), those clinical signs of evaluation the degree of block neuromuscular only we could be taken with the co-operation of the patient. The only method valuable for monitoring the neuromuscular function is the peripheral motor nerve monitoring stimulator and measuring their responses which are seeing by the skeletal muscle by whom the motor nerve is stimulating (Ulnar nerve in elbow-adductor Pollicis muscle in thumb).

Aim of the Study: Generally, evaluating from EMG view the degree of residual relaxation during the immediate post-operative period and for determing the best suitable moment for the use of the anticholinesterasic drugs.

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Train of Four (TOF): Four stimulations at 2 Hz (0.5 seconds between bursts). With non-depolarizing NMBDs, the height of the 4th twitch should be lower than the 1st. A non-depolarizing TOF > 0.7 suggests return to control height. A TOF < 0.3 for SCh suggests phase II blockade (similar to NMBD). Usually, SCh will not display a "fade" between the 1st and 4th stimulations.

Specifically, evaluating the total neuromuscular block time T.N.B. which was secondary for the use of Pancuronium, Vecuronium and atracurium and précising and comparing in which patients would be of parallel of EMG study and the use of antichoinesterase drugs and determinar the suitable moment for the extubation.

PATIENTS AND METHODS

Sixty patients of ASA-1- which were subjected orotracheal intubation underneath general anaesthesia for elective cholecystectomy and which were subclassified into three groups and of twenty patients in every one.

Index of relaxation

Relaxant type	Index of relaxation /min
Pancuronium	30,76 +_ 1.5
Vecuronium	8,46 +_ 0.31
Atracurum	9.8 +- .24

Time total duration of blocke More effective blocke for Atracurium group (49.58/48.35) than pancuronium (.25%):

Pancuronium	1.25,36 +- 4.34
Vecuronium	48.35 +- 1.34
Atracurium	49.58 +- 2.52

No. of patients with Extubation spontinouse:

relaxant	No. of patients	%	Height of Twitch
Pancuronium	6	30	81.33 +_ 11.8
Vecuronium	12	60	85.8+_ 14.42
Atracurium	13	65	88.7+_ 1.31

No. of patients without Extubation:

Pancuronium	14	70	48.12+_ 6.31
Vecuronium	8	40	51.2 +_ 7.12
Atracuriom (4)	7	35	50 +_ 8.31

Decurirization, More decurarization reversal (100%) in atracurium and vecuronium (50%) than Pancuronium (57%)

relaxant	No patients	Residual patients	%	Height of twitch before AD	Height of twitch 10 min after AD administration
Pancuronium	14	8	57%	48.12 +_ 6.3	51.25+_ 8.1
Vecuronium	8	4	50%	52.2+_ 7.12	83.2+_ 6.5
atracurium	7	7	100%	50.35+_ 8.31	85.9+_ 9.3

No. of pateints without AD So the atracuruum given patient is the only who of no need of reversal antidote

Relaxants	No. of intubation pateints	Need Reversal	%	Height of twitch
Pancuronium	14	6	42.8	22.28+_ 11.07
Vecuronium	8	4	50	32.5 +_7.6
atracurium	7	0		

Premidication: Diazepam 0.2 mg/ kg I.M., Dehidrobenzoperidol 0.03 mg / kg I.M.

Induction: Were done with thiopental sodium 3-5 mg / kg which were preceded by Fentanyl citrare 5-7 mg/ kg , then proceded by one of the muscle relaxants ; Pancuronium 0.7 mg / kg or Vecuronium 0.1 mg / kg or atracurium 0.5 mg / kg I.V[8]. in each groups successively while the twitch height. then IPPV with tidal volume 100 ml kg til End tidal CO2 between 4.5 and 5.2 % with O2 F1O2 between 0.35 and 040%.

Index of relaxation (I. R): time consumed after adminstartion muscle relaxant , of height of TOF decrease 25% of the 75% of the control Time of Duration (T. D): Total Time interval between induction of the first dose muscle relaxant and 90% finishing of the effect.

Maintenance Time (M. T):- Ttime interval between the first dose of muscle relaxant and first supplementary dose.

DISCUSSION

TOF data were also collected in a control group matched by age, sex Postoperatively, the TOF was measured mechanomyographically. The incidence of residual block (TOF < 0.7) [9]. was significantly higher in the pancuronium group (30,76%) han in the atracurium/vecuronium groups (24/450, 5.3%). however this relationship did not hold for the atracurium/vecuronium groups (9.8/8.46%)

Conclusion and Recommendation

- I.R. of atracurium and Vecuronium are 3.6 and 3.3 respectively more so they are more safer of residual recurization.
- T.D. 2.5 more blocke of atracurium and Vecuronium than of Pancuronium so preferably both than Pancuronium.
- Use of TOF monitoring provide save method for recurization of muscle relaxant.
- Using Antidote (neostigmine and atropine) only after 50% of the height of twitch.
- Extubation only after 70% of the height.

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