Dose-Response Curve of Cis-Atracurium In Patients With Liver Impairment

Thesis in
Complete Fulfilment of the MD Degree,
In Anaesthesiology

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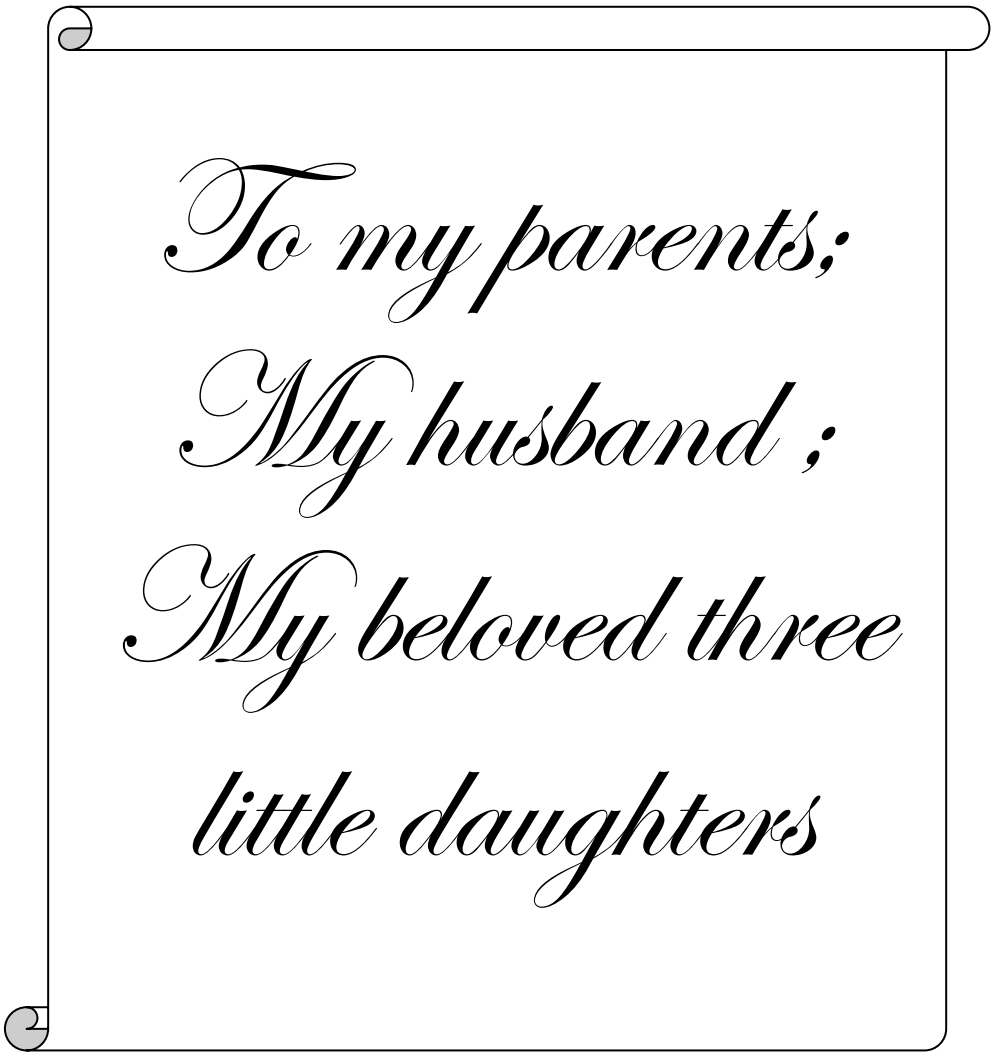
2010

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ العَلِيمُ الحَكِيمُ)

صدق الله العظيم
سورة البقرة - آية (32)


To my parents;
My husband ;
My beloved three
little daughters

Acknowledgments

***F**irst and foremost thanks to **ALLAH,** the most beneficent and most merciful.*

*I would like to express my gratitude to **Prof. Dr. Inas Kamel***

Professor of Anesthetiology, Faculty of medicine, Cairo University

I am greatly honored and pleased to have the opportunity to learn from her creative advices and expanded experience, her constant support, encouragment and willingness to teach and educate that have pushed me forward throughout this work.

***I** gratefully acknowledge the sincere advice and guidance of **Prof. Dr. Moanes Abo-Sedera, Professor of Anesthetiology, Theodor Bilharz Institute,** for his constructive direction and indispensable guidance all through this work with scientific personality and kind heart.*

*My profound thanks to **Dr.Amr Abd El- Monaem,Assistant Professor of Anesthetiology, Faculty of medicine, Cairo University,** for his continous, informative help and supportive guidance*

*My acknowledgment will not be completed without expressing my respectful thanks and gratitude to **Dr. Hosam Helmy**, **Assistant Professor of Anesthetiology, Theodor Bilharz Institute,** for his mathethmatical informations, kind help and continous support all through this work..*

Abstract

Cisatracurium is intermediately acting muscle relaxcant, it is three times more potent than atracurium, with no histamine release and devoid of cardiovascular side effects.

Patients with liver disease exhibit an abnormal response to the effect of most muscle relaxants in the form of increased dose requirements that when administered lasts longer due to delayed elimination. cisatracurium seems to be favorable exception because of its unique breakdown mechanism. This study was designed to evaluate the dose-response of cis-atracurium in patients with mild to moderate liver impairment in (Child A,B) classification comparison to healthy subjects. We used the two-doses technique of dose response curve described by Meretoja and Wirtavouri and modified by Kopman et al. for assessment.

The ED_{50} and ED_{95} for each group of subjects will be calculated & statistically analysed for each individual, and this will form the dose response curve for each individual.

In conclusion, there was no effect of liver disease on dose response to cisatracurium apart from a statistically and clinically significant higher ED95 (73.6 μg/kg in the hepatic group versus 50.99 μg/kg in the control group).

Keywards: Cisatracurium – Liver disease – Dose response curve.

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Ach	: Acetylcholin
AMG	: Acceleromyography
ANH	: Acute normovolemic hemodulation
CPB	: Cardiopulmonary by pass
CVS	: Cardiovascular
DBS	: Double burst stimulation
E>0.7	: Hepatic extraction ratio > 0.7
ECF	: Extra-cellular fluid
EMG	: Electromyography
ETI	: Effective therapeutic infusion
ETT	: Effective therapeutic infusion rate
DRG	: Dorsal root ganglion
M.sec	: Milli second
MAC	: Minimum alveolar concentration
MEEP	: Miniature acetylcholine receptor
MEPPs	: Miniature end plate potential
MMG	: Mechanomyoraphy
μsec.	: Microsecond
N_2O	: Nitrous-oxide
nAchR	: Nicotinic acetylcholine receptors

NDMR	: Non-depolarizing muscle relaxant
NDRs	: Nondepolarizing relaxation
Nm	: Nanometer
NMBD	: Neuromascular blocking drug
OPMD	: Oceulopharyngeal muscle dystrophy
PTC	: Post-tetanic count
SCG	: Sympathetic cervical ganglion
SNAREs	: Soluble N-ethylmaleinble sensitive attachment protein receptors
SNAREs	: Soluble N-ethylmaleinide sensitive attachment protein receptors
TIVA	: Total intravenous anaesthesia
TOF	: Train – of – four