بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــســـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

EVALUATION OF ANESTHETIC EFFECTS OF INTRATHECAL MAGNESIUM SULFATE

AN EXPERIMENTAL STUDY

Thesis

Submitted to the faculty of medicine, Suez Canal University in partial fulfillment of the requirements of doctoral degree in anesthesiology.

By

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''Praise be to **GOD**, the master of the worlds, the most gracious, the most merciful''

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INTRODUCTION

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Magnesium is the second most abundant intracellular cation and an essential ingredient in the body electrolyte and metabolic constitution. It serves as an essential co-factor in a multitude of enzyme reactions; especially those involved in energy metabolism, phosphate transfer, and muscle contractility and neurochemical transmission.[19]

Magnesium has been called the physiologic calcium channel blocker as the processes activated by calcium may be inactivated by magnesium ions.[28] Despite magnesium sulfate being widely regarded as a central nervous system depressant and despite early reports of its use as a general anesthetic, subsequent work has shown that even high level of serum magnesium failed to produce anesthesia provided that ventilation is maintained.[41] Magnesium sulfate has long been recognized to interfere with normal electrophysiological properties of nerve fibers.[42]

There are clinical reports of inadvertent use of magnesium sulfate for spinal and epidural anesthesia. As long ago as 1906 Haubold and Meltzer reported that magnesium sulfate injected intrathecally in humans produce spinal anesthesia, consisting of profound sensory and motor block without any untoward effects.[38]

Lejuste described the unintentional injection of 2 ml of magnesium sulfate 50% in a 23-year-old woman who developed motor paralysis without loss of sensation. [237]

These studies ware recently reinforced by experimental studies done in rats. Bahar et al. [230]evaluated spinal anesthesia in a rat model, and

found that intrathecal magnesium sulfate produced sensory and motor block without significant hemodynamic and respiratory changes, and with absence of neurotoxic effects. Other reports had documented the anesthetic effects of intrathecal magnesium sulfate, but in the same animal model. [235,251] This motivated us to study the anesthetic effects of magnesium sulfate in another animal model, the rabbit.

Use of magnesium sulfate for spinal anesthesia may have advantages over the conventional local anesthetics. Magnesium sulfate is a cheap salt, and the long history of its use in obstetric practice had documented its safety. As magnesium is also known to antagonize N-methyl-D-aspartate (NMDA) receptors and to have neuroprotective effects on spinal cord and brain [232], it would be an ideal agent for use in spinal anesthesia.

RESEARCH QUESTION

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What are the anesthetic effects of intrathecal magnesium sulfate in rabbits?

AIM OF THE WORK

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The aim of the study is to evaluate the anesthetic effects of intrathecal magnesium sulfate in rabbits, and to study also the hemodynamic, respiratory, and neurotoxic effects of intrathecal magnesium sulfate in rabbits.