

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار





Effect of Magnesium Sulfate "MgSO₄" Therapy in Preterm Deliveries, Bolus versus Bolus and Infusion Protocols on Apgar score: Randomized Clinical Trial (RCT)

Thesis

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By

Waleed Tarek Abdelrahman Sarhan

*Faculty of Medicine – Misr University for Science and Technology
"MUST" University 2015*

Resident of Obstetrics and Gynecology Soad Kafafi University Hospital

Under Supervision of

Prof. Dr. Noha Hahmed Rabei

*Professor of Obstetrics & Gynecology
Faculty of Medicine – Ain Shams University*

Dr. Doaa Mohamed Mohamed Khalifa

*Lecturer in Obstetrics and Gynecology
Faculty of Medicine – Ain Shams University*

Dr. Mohamed ElSayed ElHodiby ElDarawi

*Lecturer in Obstetrics and Gynecology
Faculty of Medicine – MUST University*

Faculty of Medicine - Ain Shams University

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Contents

Title	Page No.
List of Tables.....	5
List of Figures	6
List of Abbreviations.....	8
Protocol.....	
Introduction	- 1 -
Aim of the Work	14
Review of Literature	
▪ Magnesium Sulfate (Mgso4)	15
▪ Preterm Labor	31
▪ Role of MgSO4 in Neuroprotection	75
Patients and Methods.....	86
Results.....	93
Discussion	109
Summary.....	117
Conclusion	123
Recommendations	125
References	126
Arabic Summary	

List of Tables

Table No.	Title	Page No.
Table 1:	Commonly recognized etiologies and pathways leading to spontaneous preterm birth.....	47
Table 2:	Main outcomes of randomized controlled trials and meta-analysis assessing the impact of antenatal administration of magnesium sulphate	85
Table 3:	Personal and present history	93
Table 4:	Obstetric history	95
Table 5:	Obstetric complications	98
Table 6:	Systolic and diastolic blood pressure in patients with preeclampsia	100
Table 7:	Material side effects after administration of magnesium sulphate	101
Table 8:	Apgar score 1 minute and 5 minute post delivery.....	102
Table 9:	Neonatal outcome in both groups	103
Table 10:	Full labs	105
Table 11:	Previous studies done on the effect of magnesium sulphate as a neuroprotection in preterm labour including our study.....	116

List of Figures

Fig. No.	Title	Page No.
Figure 1:	Mechanisms of excitotoxic-mediated injury	17
Figure 2:	Vascular effects of magnesium sulphate	21
Figure 3:	Indications for magnesium as therapeutic agent	22
Figure 4:	Biomolecular mechanisms linking inflammation with parturition	35
Figure 5:	The temporal relationship between ascending intrauterine infection, choriamnionitis, intraamniotic infection, and fetal inflammatory response	37
Figure 6:	The relationship between gestational age at delivery, infection inflammation and neonatal outcomes	43
Figure 7:	Pathways leading to preterm birth	47
Figure 8:	Comparison between Pt took bolus only and pt took bolus and infusion regarding smoker, hypertension and diabetes mellitus.	94
Figure 9:	Comparison between Pt took bolus only and pt took bolus and infusion regarding age.	94
Figure 10:	Comparison between both groups regarding parity.....	96
Figure 11:	Comparison between both groups regarding cesarean section delivery.	96
Figure 12:	Comparison between both groups regarding gestational age.....	97
Figure 13:	Comparison between both groups regarding preterm labor history, premature rupture of membrane, ante-partum hemorrhage, preeclampsia and intrauterine growth retardation.....	99

List of Figures (cont...)

Fig. No.	Title	Page No.
Figure 14:	Comparison between both groups regarding hypo reflex.	101
Figure 15:	Comparison between both groups regarding APGAR 1 min and APGAR 5 min.	102
Figure 16:	Comparison between both groups regarding neonatal intubation, respiratory distress syndrome, neonatal death, intra ventricular hemorrhage, periventricular hemorrhage and necrotizing enterocolitis.	104
Figure 17:	Comparison between both groups regarding ALT and AST.	106
Figure 18:	Comparison between both groups regarding urea and hemoglobin.	106
Figure 19:	Comparison between both groups regarding creatinine.	107
Figure 20:	Comparison between both groups regarding platelets.	107
Figure 21:	Comparison between both groups regarding white blood cells.	108

List of Abbreviations

Abb.	Full term
ACOG	<i>American College of Obstetricians and Gynecologists</i>
AF	<i>Amniotic fluid</i>
ALT	<i>Alanine transaminase</i>
APHge.....	<i>Ante-partum hemorrhage</i>
AST	<i>Aspartate aminotransferase</i>
BMI	<i>Body mass index</i>
C.P	<i>Cerebral palsy</i>
CAI.....	<i>Chorioamnionitis</i>
CAP.....	<i>Contractile-associated proteins</i>
CAPs	<i>Contraction associated proteins</i>
CCBs	<i>Calcium channel blockers</i>
Creat	<i>Creatinine</i>
CRH	<i>Corticotrophin releasing hormone</i>
CS	<i>Cesarean section</i>
DBP	<i>Diastolic blood pressure</i>
DM	<i>Diabetes mellitus</i>
FIRS	<i>Fetal inflammatory response syndrome</i>
GBS	<i>Group B streptococcus</i>
Hb	<i>Hemoglobin</i>
Hellp \$	<i>Hemolysis elevated liver enzymes low platelet syndrome</i>
HS	<i>Highly significant</i>
HTN	<i>Hypertension</i>
IM	<i>Intramuscular</i>
IUGR	<i>Intrauterine growth retardation</i>
IV	<i>Intravenous</i>
IVHge	<i>Intra ventricular hemorrhage</i>
Mgso4	<i>Magnesium Sulfate</i>
MMP.....	<i>Matrix metalloprotease</i>
NA.....	<i>Not applicable</i>

List of Abbreviations (cont...)

Abb.	Full term
<i>NEC</i>	<i>Necrotizing enterocolitis</i>
<i>NF-κB</i>	<i>Nuclear factor-κB</i>
<i>NMDA</i>	<i>N-methyl- D –aspartate</i>
<i>NS</i>	<i>Non significant</i>
<i>NSAIDs</i>	<i>Nonsteroid anti-inflammatory drugs</i>
<i>PG</i>	<i>Prostaglandins</i>
<i>PGE2</i>	<i>Prostaglandin E2</i>
<i>PGs</i>	<i>Prostaglandins</i>
<i>PPROM</i>	<i>Preterm premature rupture of membranes</i>
<i>PR</i>	<i>Progesterone receptor</i>
<i>PROM</i>	<i>Premature rupture of membrane</i>
<i>PTLHx</i>	<i>Preterm labor history</i>
<i>RDS</i>	<i>Respiratory distress syndrome</i>
<i>ROM</i>	<i>Rupture of membranes</i>
<i>ROS</i>	<i>Reactive oxygen species</i>
<i>S</i>	<i>Significant</i>
<i>SBP</i>	<i>Systolic blood pressure</i>
<i>STBM</i>	<i>Syncytiotrophoblast membrane</i>
<i>VOCC</i>	<i>Voltage-operated calcium channels</i>
<i>WBCs</i>	<i>White blood cells</i>

INTRODUCTION

Preterm birth can be considered a complex problem in relation to baby's development to the parents' practical and emotional experience and to mother child interaction. The poor developmental outcomes of preterm infants have been well documented (*Ionio et al., 2017*).

Protection of the immature brain of premature infants constitutes a crucial challenge for obstetricians and neonatologists (*Chollat et al., 2017*).

Preterm birth is a risk factor for cerebral palsy (C.P.), a condition characterized by abnormal control of movement and posture that results in limitation of activity (*Horton et al., 2015*).

Although the survival of premature infants is continuously improving, their neurological outcome remains a major concern, as preterm birth is associated with neuro-developmental impairments such as neuromotor deficits, cognitive deficits, learning disabilities, behavioral and psychiatric disorders and neurosensory deficiencies (*Chollat et al., 2017*).

Currently, one third of cases of cerebral palsy (C.P.) are associated with early preterm birth (*Horton et al., 2015*).

Almost 40% of individuals with C.P. were born preterm and the risk of C.P. increases with decreasing gestational age (*Chollat et al., 2017*).

Although survival rates of babies born preterm have risen, there has been no parallel fall in neuro-developmental impairment rates, especially among babies born very preterm at < 32 weeks' gestation (*De Silva et al., 2018*).

Magnesium is an ionized mineral essential to hundreds of enzymatic processes, including hormone receptor binding, energy metabolism, muscle contractility as well as neuronal and neurotransmitter function (*Lingam and Robertson, 2018*).

It is primarily an intracellular cation, and stores are distributed between bone (53%), muscle (27%), and soft tissue (19%). Serum magnesium levels are tightly controlled (0.65–1.05 mmol/L), and homeostasis is maintained through intestinal absorption, storage in bones, and renal excretion (*Lingam and Robertson, 2018*).

Magnesium has an inhibitory effect at neuronal synapses, leading to its use as an anticonvulsant, particularly in eclamptic seizures (*Lingam and Robertson, 2018*).

Magnesium sulfate "Mgso4" is involved in many intracellular processes, acting to induce cerebral vasodilatation, reduce inflammatory cytokines and oxygen free radicals, and inhibit calcium influx into cells. Animal studies have shown

that it has a neuroprotective effect and that it may also interact with antenatal steroids to preserve the integrity of the blood-brain barrier in neuroinflammation (**Bouet et al., 2015**).

Three major randomized clinical trials suggest that magnesium sulfate administered before an anticipated early preterm birth reduces the risks of cerebral palsy in surviving infants. In March 2010, the American College of Obstetricians and Gynecologists (ACOG) and Society for Maternal Fetal Medicine released a joint clinical opinion stating that the available evidence suggests that magnesium sulfate is a fetal neuroprotectant (**Horton et al., 2015**).

There is strong evidence to support antenatal magnesium Sulphate (MgSO_4) infusion in order to prevent CP in context of prematurity. Based on animal and human observational studies that demonstrated a neuroprotective effect of MgSO_4 (**Chollat et al., 2017**).

Sixty-three women had to be treated in order to prevent CP in one child (95% CI 43 to 155). However, no statistically significant effect on infantile mortality was observed. In the light of these convincing results, several national authorities (USA, Australia and New Zealand, Canada, UK, Belgium and Ireland) have recommended antenatal administration of MgSO_4 in women at imminent risk of very preterm birth in order to prevent cerebral palsy (**Chollat et al., 2017**).