Effect of Loading Dose of Magnesium Sulfate on Doppler Parameters of the Uterine , Fetal Umbilical and Middle Cerebral Arteries in Patients with Severe Preeclampsia and Eclampsia

THESIS

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Mahmoud Ahmed Ismael

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List of Abbreviations

ACOG	American College of Obstetrics and Gynecology
ALT	Alanine Transaminase
AST	Aspartate Transaminase
BP	Blood Pressure
CNS	Central Nervous System
CW	Continous Wave
DBP	Diastolic Blood Pressure
HELLP	Hemolysis, Elevated Liver enzymes, Low Platelete count
HLA	Human Leucocytic Antigen
HIF1α	Hypoxia inducible factor 1 α
Hz	Hertz
IL	Interleukin
IM	Intra-Muscular
INR	International normalized ratio.
IUGR	Intra-Uterine Growth Restrection
IV	Intravenous
Kg	Kilo gram

MCA	Middle Cerebral Artery
MCA-PI	Middle Cerebral Artery – Pulsatility Index
MCA-PSV	Middle Cerebral Artery – Peak Systolic Velocity
MCA-RI	Middle Cerebral Artery – Resistance Index
mEq	Milli-equivalent
mg	milligram
MgSO4	Magnesium Sulfate
NHBPEP	National High Blood Pressure Education Program
NICU	Neonatal Intensive Care Unit
NK	Natural Killer
PI	Pulsatility Index
P value	Value of Probability
RH	Rhesus
RI	Resistence Index
SBP	Systolic Blood Pressure
S/D	Systolic / Diastolic
SD	Standard Deviation

UA	Umbilical artery
UA-PI	Umbilical artery - Pulsatility Index
UA-RI	Umbilical artery - Resistance Index
UAV	Umbilical Artery Velocimetry
U/S	Ultrasound
VOCC	Voltage –operated calcium channels
VS	Versus
WHO	World Health Organization

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ABSTRACT

OBJECTIVE : To evaluate the effect of loading dose of magnesium sulfate on Doppler velocimetry parameters (resistance index **[RI],** pulsatility index **[PI]** and systolic/diastolic **[S/D]** ratio) of the uterine , fetal umbilical and middle cerebral arteries in pregnant patients with severe preeclampsia and eclampsia and to assess serum magnesium level in those patients .

METHODS : A observational analytic case - control study that included sixty pregnant women who attended the Obstetrics and Gynaecology hospital , Kasr El Aini, Cairo university during the period from March 2015 till the end of January 2016 was developed .

They were divided into two groups ; Study group & Control group.

The **Study group** included 30 pregnant patients with severe preeclampsia or eclampsia who were given magnesium sulphate therapy .

Doppler flow velocity parameters (resistance index **[RI],**pulsatility index **[PI]** and systolic/diastolic **[S/D]** ratio) were evaluated in the uterine, fetal umbilical and middle cerebral arteries before and 20 minutes after intravenous administration of 6 grams of magnesium sulfate (Loading dose).

Maternal parameters such as heart rate, systolic and diastolic blood pressures were recorded.

Serum magnesium before and 20 minutes after administration of magnesium sulphate was measured .

The **Control group** included 30 pregnant women without any medical disease with singleton pregnancy with the same age , parity and gestational age of the study group .

In this control group, Doppler flow velocity parameters (resistance index **[RI],**pulsatility index **[PI]** and systolic/diastolic **[S/D]** ratio) were evaluated in the uterine, fetal umbilical and middle cerebral arteries and serum magnesium level was measured.

RESULTS: There was statistically significant difference of means of uterine artery, fetal umbilical and middle cerebral arteries Doppler indices before and after the magnesium sulfate.

CONCLUSION: Intravenous administration of magnesium sulfate in pregnant women with severe preeclampsia and eclampsia resulted in a decrease in uterine artery, fetal umbilical and middle cerebral arteries Doppler indices with reduced resistance to blood flow in these vessels.

Key Words: Preeclampsia, Magnesium sulfate and Doppler ultrasound.