

eISSN : 2579-8324

pISSN : 2579-8323

Alamat Korespondensi:

Ruang Redaksi Andalas Obstetrics and Gynecology Journal, Lantai 3 PPDS Obstetri dan Ginekologi Universitas Andalas, RSUP DR. M. Djamil Padang, Jl. Perintis Kemerdekaan Padang, Sumatera Barat 25127

Website:

<http://jurnalobgin.fk.unand.ac.id/index.php/JOE>

RESEARCH

Relationship Between The Provision Of Magnesium Sulfate in Severe preeclampsia and Eclampsia Patients with Hipermagnesium Events in Dr. M. Djamil Hospital Padang

Mayuliani¹, Dovy Djanas²

Affiliations : 1. Resident of Obstetrics and Gynecology, Faculty of Medicine, Andalas University, Dr. M. Djamil Central General Hospital Padang; 2. Sub Division of Maternal Fetal Medicine, Obstetrics and Gynecology Department, Faculty of Medicine, Andalas University, Dr. M. Djamil Central General Hospital Padang

Correspondence: Mayuliani, email : lenbowfiz99@gmail.com, Hp: 085263337382

Abstract

Objective : To find out the relationship between the duration of MgSO₄ administration in severe preeclampsia patients and eclampsia with the incidence of hypermagnesium.

Method : This study is a comparative observational study using a cross sectional study design. The study was conducted in the medical record of Dr.M.Djamil Padang Hospital during the period January 1, 2016 to August 31, 2017 of pregnant women with severe preeclampsia and eclampsia, found 30 study subjects who met the inclusion criteria. Furthermore, data is recorded in a research form that has been provided, then carried out research data processing. Statistical analysis to assess significance using the chi-square test.

Results : Magnesium levels increased in pregnant women with severe preeclampsia and eclampsia by 21 correspondents. Increased Magnesium levels in patients with severe preeclampsia and eclampsia who received MgSO₄ treatment for 48 hours by 16 correspondents (84.2%) and 5 correspondents with MgSO₄ administration for 24 hours.

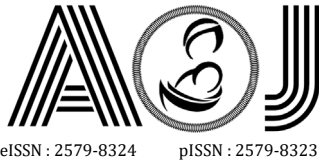
Conclusion : There is a significant relationship between the duration of Magnesium Sulfate with the incidence of hyperpermagnessium in patients with severe preeclampsia and eclampsia.

Keywords: severe preeclampsia, eclampsia, magnesium sulfate, magnesium levels

INTRODUCTION

The maternal mortality ratio in 2013 was 210 maternal deaths per 100,000 live births. Around 800 women die per day due to complications of pregnancy or childbirth and 99% occur in developing countries. This condition is still very far from the Millennium Development Goals (MDGs) target. The main complications that explain nearly 75% of maternal deaths are bleeding 27%, pre-eclampsia and eclampsia 14%, infections 11%, parturition jams 9%, and complications of abortion 8%. In 2014, in Southeast Asia maternal deaths were a result by preeclampsia by 17% and in Indonesia by 25%.¹

The maternal mortality rate is a general indicator of the health of a population as a whole, an indicator of the status of women in society, as well as how efficient the functioning of the existing health service system is. The high maternal mortality rate is considered a sign of a problem in the health status and health services in a country. According to the 2007 IDHS



eISSN : 2579-8324

pISSN : 2579-8323

Alamat Korespondensi:

Ruang Redaksi Andalas Obstetrics and Gynecology Journal, Lantai 3 PPDS Obstetri dan Ginekologi Universitas Andalas, RSUP DR. M. Djamil Padang, Jl. Perintis Kemerdekaan Padang, Sumatera Barat 25127

Website:

<http://jurnalobgin.fk.unand.ac.id/index.php/JOE>

records, in Indonesia the Maternal Mortality Rate (MMR) has decreased from 318 per 100,000 live births in the year 1997 to 228 per 100,000 births lived in 2007.²

Research conducted in M.Djamil Padang in 1998-2002 found the incidence of preeclampsia was 5.5% or 663 cases and eclampsia was 0.88% or 106 cases of 12034 deliveries, 65% of cases of preeclampsia were term pregnancies.³ During the period of 1 January 2005 to 31 December 2007 in the General Hospital. DR. M. Djamil Padang obtained severe preeclampsia in 220 cases (4.99%) and in eclampsia in 47 people (1.07%) of 4407 deliveries. Data from medical records of patients treated in Obstetrics and Gynecology Hospital Dr. DR. M. Djamil Padang in 2011 had 125 preeclampsia cases (8.31%) out of 1395 deliveries. This number is increasing every year, which is 193 cases (11.47%) of 1,682 deliveries during 2012, and 206 cases (12.02%) of 1,714 deliveries in 2013.⁴

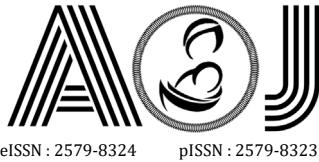
Preeclampsia is an acute pregnancy disorder that can occur when ante, intra, even postpartum. The clinical picture of each individual is different. The most important clinical manifestations as a sign of pre-eclampsia are proteinuria, hypertension, and edema. Accordingly theoretically, the sequence of symptoms is edema, hypertension and proteinuria.⁵

Preeclampsia is most common associated with renal complications in pregnancy, characterized by new hypertension and Basic pathophysiology of pre-eclampsia eclampsia is vasospasm. Vasospasm will resulting in resistance to blood flow and causing arterial hypertension. Angiotensin II will also cause endothelial cells to contract. All these changes will cause endothelial cells to become damaged and leakage of gaps between endothelial cells will occur. This change is also in conjunction with vascular hypoxia in the surrounding tissue that is thought to cause bleeding, necrosis and damage to other end-organs.⁵

In Indonesia, the use of magnesium sulfate in patients with preeclampsia and eclampsia is long enough and at the time of KOGI VI in Ujung Pandang by the POGI Gestosis Task Force was determined magnesium sulfate was the only drug used for the treatment of preeclampsia and eclampsia.⁷

Maternal side effects due to the use of magnesium sulfate are usually dose dependent. Side effects that often occur are flushing, nausea, headache, drowsiness, diplopia, and blurred vision. Toxicity level clinical determined by content MgSO₄ such as depression of the central nervous system at levels of 6-8 mmg / dL, loss of tendon age reflex at levels of 8-10 mg / dL, respiratory depression at levels of 12-17 mg / dL, coma at parity levels of 13-17 mg / dL, cardiac arrest at levels of 19-20 mg / dL.⁸

This prompted the authors to examine the effectiveness of the duration of MgSO₄ administration in patients with severe preeclampsia and eclampsia in the ICU and HCU RSUP Dr. M. Djamil Padang 1 January 2016 - 31 August 2017 to increase magnesium in maternal serum.



eISSN : 2579-8324

pISSN : 2579-8323

Alamat Korespondensi:

Ruang Redaksi Andalas Obstetrics and Gynecology Journal, Lantai 3 PPDS Obstetri dan Ginekologi Universitas Andalas, RSUP DR. M. Djamil Padang, Jl. Perintis Kemerdekaan Padang, Sumatera Barat 25127

Website:

<http://jurnalobgin.fk.unand.ac.id/index.php/JOE>

METHOD

This research is a comparative observational study with a cross sectional study design. This research was conducted by looking at the status of the subject's medical records in Dr. RSUP medical records M. Djamil Padang starts from 1 January 2016 - 31 August 2017. Data collected included age, parity, sodium and potassium levels of pregnant women. The data is collected and presented in tabular form.

RESULTS**Table 1.** Characteristics of Research Subjects between Severe preeclampsia and Eclampsia

Characteristics		Severe Preeclampsia n = 38	Eclampsia n = 22
Age		30,29 ± 5,55	30,95 ± 5,13
Parity	Nullipara	13 (34%)	6 (27,3%)
	Multipara	25 (64%)	16 (72,7%)

Table 1 above shows the mean characteristics of the study subjects by age, parity group and gestational age group. There is a similarity in the mean age of severe preeclampsia mothers 30.29 ± 5.55 years with eclampsia 30.95 ± 5.13 years. In the severe preeclampsia and eclampsia groups it was found that multipara parity respondents had the highest respondents (64% and 72.7%). Preterm gestational age had the highest respondent in the severe preeclampsia group (76.3%).

Table 2. Differences in Mean Maternal Sodium Serum between Severe preeclampsia and Eclampsia

Variable	Mean (sb)	p-value*	Mean Differences (CI 95%)
Severe preeclampsia (n=38)	137,95 (4,59)	0,125	1,99 (-0,573 – 0,267)
Eclampsia (n=22)	135,95 (4,84)		

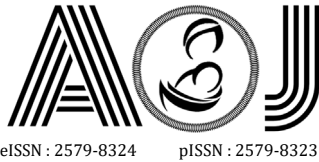
*independent sample t-test

From the above table data it is known that the mean maternal serum sodium between Severe Preeclampsia and Eclampsia is not far different (137.95 and 135.95). Statistically, there was no significant difference between the mean maternal serum sodium ratio between severe preeclampsia and eclampsia ($p > 0.05$).

Table 3. Difference in mean maternal serum potassium between severe preeclampsia and eclampsia

Variable	Mean (sb)	p-value*	Mean Differences (CI 95%)
Severe preeclampsia (n=38)	3,818 (0,64)	0,529	-0,415 (-0,609 – 0,319)
Eclampsia (n=22)	3,964 (0,95)		

*independent sample t-test



eISSN : 2579-8324

pISSN : 2579-8323

Alamat Korespondensi:

Ruang Redaksi Andalas Obstetrics and Gynecology Journal, Lantai 3 PPDS Obstetri dan Ginekologi Universitas Andalas, RSUP DR. M. Djamil Padang, Jl. Perintis Kemerdekaan Padang, Sumatera Barat 25127

Website:

<http://jurnalobgin.fk.unand.ac.id/index.php/JOE>

From the table data above it is known that the mean maternal serum potassium between Severe Preeclampsia and Eclampsia is not much different (3,818 and 3,964). Statistically, there was no significant difference between the mean maternal serum potassium ratio between severe preeclampsia and eclampsia ($p > 0.05$).

Table 4. Mean Difference in Maternal Serum Sodium Ratio between Severe preeclampsia and Eclampsia

Variable	Mean (sb)	p-value*	Mean Differences (CI 95%)
Severe preeclampsia (n=38)	37,218 (6,94)	0,481	1,355 (-2,49 – 5,19)
Eclampsia (n=22)	35,864 (7,21)		

*independent sample t-test

From the table data above it is known that the mean maternal serum potassium sodium between Severe Preeclampsia and Eclampsia is not much different (37,218 and 35,864). There was no statistically significant difference between the mean Maternal Serum Sodium Potassium Ratio Average between severe preeclampsia and Eclampsia ($p > 0.05$).

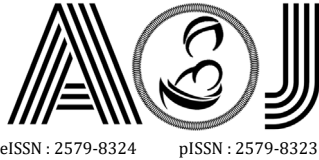
DISCUSSION

Characteristics of research subjects with the incidence of severe preeclampsia and eclampsia, more than half of respondents (64.7%) aged 20-35 years experienced severe preeclampsia events and more than half of respondents (61.5%) who experienced eclampsia. This is not in accordance with the literature which says that the risk factors for preeclampsia are ≤ 20 years and ≥ 35 years.⁸

Gravid / parity characteristics with the incidence of severe preeclampsia and eclampsia, most correspondents with gravid / parity.¹ This is consistent with the literature which says that the incidence of preeclampsia and eclampsia occurs in primigravida because primigravida often experiences stress. in the face of childbirth.⁹

The results of the independent sample T test statistic test revealed that there were no differences in the mean magnesium levels after administration of MgSO₄ in severe preeclampsia patients and eclampsia ($p > 0.05$). The mean magnesium level after administration of MgSO₄ in severe preeclampsia patients was 3.05 ± 0.98 mmol / L and eclampsia was 3.61 ± 1.23 mmol / L. There is a significant relationship between the length of MgSO₄ administration with increased levels of Magnesium / hypermagnesium.

The incident Hypermagnesium was more abundant in respondents with the duration of 48 hour MgSO₄ giving 66.7% compared to 24 hours giving 33.3%. This is in accordance with the literature which says that magnesium sulfas is given 24 hours after post-saline⁹, other literature states that MgSO₄ should be stopped if within 6 hours postpartum blood pressure has improved (normotensive) and if there are signs of intoxication after 24 hours postpartum.¹⁰



eISSN : 2579-8324

pISSN : 2579-8323

Alamat Korespondensi:

Ruang Redaksi Andalas Obstetrics and Gynecology Journal, Lantai 3 PPDS Obstetri dan Ginekologi Universitas Andalas, RSUP DR. M. Djamil Padang, Jl. Perintis Kemerdekaan Padang, Sumatera Barat 25127

Website:

<http://jurnalobgin.fk.unand.ac.id/index.php/JOE>

REFERENCES

1. Muhani N. Kesmas: National Journal of Public Health Vol. 10, No. 2, November 2015.
2. Widhyaningrum PD, IBG Fajar Manuaba. Medika E-Journal, Vol. 6 No.6, June, 2017. [Http: //ojs.unud.ac.id/index.php/eum](http://ojs.unud.ac.id/index.php/eum)
3. Madi J and Sulin D. Mortality Rates of Preeclampsia and Eclampsia Patients in Hospital. Dr. M. Djamil Padang in 1998-2002. Obstetrics and Gynecology Section FK. Unand / RS. Dr. Djamil Padang. 2003.
4. Medical record. Obsgyn Hospital Section. Dr. M. Djamil Padang for period 1 January 2016 - 31 August 2017
5. Karima NM, Rizanda Machmud. Relationship between Risk Factors and Severe Pre-Eclampsia in RSUP Dr. M. Djamil Padang. [Http // journal.fk.unand.ac.id](http://journal.fk.unand.ac.id). 2015.
6. Epstein FH, Karumanchi SA. In Pregnancy and the Kidney. J.Nephrology : Harvard Medical School. 2005; 3: 9
7. Angsar MD, Simanjuntak P, Handaya, Syahid S. Guidelines for treating hypertension in pregnancy in Indonesia. First edition: POGI Gestosis Task Force, 2013: 1-24. 2013.
8. Cunningham FG, et al. Chapter 34 Pregnancy Hypertension in: Williams Obstetrics 24rd, New York: The McGraw Hill Companies. 2014.
9. ACOG (The American College of Obstetricians and Gynecologists). Maternal Safety Bundle for Severe Hypertension in Pregnancy. Revised July 2017
10. Meita H. Relationship Between Age, Parity And Mother's Education With The Incidence Of Eclampsia At Muhammadiyah Hospital Palembang. "Scientific Meeting of Research and Community Service Results. Rakipas Aipkema; 2016. p. 232-234