|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2019: 79.34
Original Research Article
Volume 5, Issue 1; January: 2021; Page No. 397-399

TO ASSESS CORRELATION BETWEEN SERUM HOMOCYSTEINE LEVELS AND SEVERITY OF PRE-ECLAMPSIA

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Article Info: Received 07 December 2020; Accepted 22 January 2021
DOI: https://doi.org/10.32553/ijmbs.v5i1.1818
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Conflict of interest: No conflict of interest.

Abstract

The present study was conducted in Department of Obstetrics and Gynecology, Index Medical College Indore, M.P. It is a prospective study. The cases were selected from patients who were admitted in labor room as emergency cases, irrespective of age and parity. The serum homocysteine levels were significantly higher among women with severe preeclampsia and eclampsia than mild preeclampsia and controls. In our study we have found that the incidence of poor perinatal outcome (in the form of nursery admission/IUD/SVD) were higher in pre-eclampsia and eclampsia. Those patients with increased serum homocysteine levels had higher incidence of these complications as well as of poor perinatal outcome.

Keywords: serum, homocysteine, pre-eclampsia & severity.

Introduction

Earliest mention of hypertensive disorder in pregnancy was given by Hippocrates (1). He thought that headache, drowsiness and convulsions were of serious significance in pregnant women. Officially the word eclampsia first appeared in a treatise in gynaecology by Varandeus in 1619(2).In the 18th century, Boissier de Sauvages distinguished eclampsia from epilepsy. Venesection, the use of opiates, warm baths, splashing of the face with cold water, and hastening of delivery were the staple treatment of eclampsia. (3).the theory posited by Roberts and colleagues in 1989 continues to guide research related to preeclampsia-eclampsia etiology. Dr. Roberts and colleagues posited that preeclampsia represented an endothelial disorder. Drawing on past work that associated preeclampsia with shallow trophoblast invasion and subsequent reduction in placental perfusion, they hypothesized that the ischemic placenta released a damaging factor(s) into the maternal circulation.

Ten percent of all pregnancies are complicated by hypertension. Eclampsia and preeclampsia account for about half of these cases worldwide and have been recognized and described for years despite the general lack of understanding of the disease.

It is observed that levels of maternal serum homocysteine normally decrease with gestation, either due to a physiological response to the pregnancy, increase in estrogen, haemodilution from increased plasma volume, or increased demand for methionine by both the mother and fetus(4) .

Material & Method

The present study was conducted in Department of Obstetrics and Gynecology, Index Medical College Indore, M.P. It is a prospective study and study period from May 2017 to April 2018. With sample size in Group 1 – 254 & in Group 2 – 174.

Selection of cases

The cases were selected from patients who were admitted in labor room as emergency cases, irrespective of age and parity. On a specially designed proforma for the study, the patients particulars like detail obstetric history, examination and laboratory findings were recorded. Patients were matched according to gestational age and Body Mass Index. Informed consent was taken from each pregnant women enrolled in study.

Inclusion Criteria

- Singleton pregnancies.
- None of the subject was in active labor.
- All subjects received folic acid supplementation until 12 weeks of gestation.

Exclusion Criteria

- Essential hypertension suggested by history or documentation of hypertension in pre-pregnant state or hypertension before 20 weeks or gestation.
- Cardiovascular or renal disease.
- Liver disease.
- Multiple pregnancy.
- Diabetes Mellitus.

Results

Table 1: Distribution of cases according to serum homocysteine levels (micromoles/litre)

	< 8(micromoles/l) (Group 1)		> 8 (micromoles/l) (Group 2)	
	No	**%**	**No**	**%**
Mild Pre-eclampsia (1)	112	44.1	16	9.2
Severe Pre-eclampsia (2)	14	5.51	86	49.43
Eclampsia(3)	04	1.57	60	34.48
Normal (4)	124	48.82	12	6.98
Total	254		174	

Table 2: Perinatal outcome according to serum homocysteine levels (micromoles/litre)

Perinatal outcome	< 8(micromoles/l) (Group 1)		> 8 (micromoles/l) (Group 2)	
	No	**%**	**No**	**%**
Healthy baby (1)	224	88.19	58	33.33
Sick baby (2)	26	10.24	76	43.68
IUD (3)	04	1.57	40	22.99
Total	254		174	

Table 3: Complications according to serum homocysteine levels (micromoles/litre)

	< 8(micromoles/l) (Group 1)		> 8 (micromoles/l) (Group 2)	
	No	**%**	**No**	**%**
Abruption	04	1.57	14	8.05
Retinopathy	18	7.08	72	41.38
ARF	00	00	10	5.75
CVA	00	00	04	2.29
MODS	00	00	14	8.05
DIC	00	00	02	1.15
Shock	00	00	10	5.75
Died	00	00	12	6.89

Discussion

Serum homocysteine was more than 8 micromol per litre in 12.5% of mild pre-eclamptics, 86% of severe pre-eclampsia patients and 93.75% of eclampsia patients. The mean serum homocysteine levels in eclampsia group was 14.91 micromol/ltr, with a standard deviation of 3.97.

The mean serum homocysteine levels in severe preeclampsia group was 12.24 micromol/litre , with a standard deviation of 3.73. The mean serum homocysteine levels in mild preeclampsia group was 8.4 micromol/litre, with a standard deviation of 1.19. The mean serum homocysteine levels in the normal group was 6.65 micromol/litre, with a standard deviation of 1.27.

Metin Ingec et al(5) showed that the plasma homocysteine levels were significantly higher among women with severe preeclampsia and eclampsia than mild preeclampsia and controls. Refsum et al (1998), walker et al (1999), Hogg et al (2000)(6) and Lopez Quesada et al(7)in 2003 have also demonstrated the relationship between hyperhomocysteinemia and preeclampsia. Mignini et al (2005)(8) showed that serum homocysteine levels were higher in preeclampsia than uncomplicated pregnancy.

Conclusion

The serum homocysteine levels were significantly higher among women with severe preeclampsia and eclampsia than mild preeclampsia and controls. In our study we have found that the incidence of poor perinatal outcome (in the form of nursery admission/IUD/SVD) were higher in pre-eclampsia and eclampsia. Those patients with increased serum homocysteine levels had higher incidence of these complications as well as of poor perinatal outcome.

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