COMPARATIVE STUDY OF LOW DOSE MAGNESIUM SULPHATE & PRITCHARD REGIME FOR ECLAMPSIA & IMMINENT ECLAMPSIA

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ABSTRACT: BACKGROUND: Eclampsia/ Pre-eclampsia are leading causes of maternal mortality. Various mgso_4 regimes are used to control convulsions. As the Indian women have less weight low dose mgso_4 was used. **AIMS OBJECTS:** To study comparative efficacy of low dose mgso_4 in controlling convulsions in Eclampsia and in preventing convulsions in imminent Eclampsia **METHODS A MATERIALS:** Randomised Prospective study in which 60 cases were studied with low does mgso_4 and 60 cases with Pritchard regime. Serum mg^{++} levels were studied in every patient. **RESULTS:** Convulsions were controlled in 90% cases of low dose regime and in 91.60% cases of Pritchard regime in eclampsia. The success rate in seizure Prophylaxis was 100% in both regimes for imminent eclampsia. **CONCLUSIONS:** Low dose mgso_4 regime is equally effective in controlling / preventing convulsions if compared with Pritchard regime

KEY WORDS: low dose mgso_4 regime – Pritchard regime – eclampsia

MESH TERM: Eclampsia prevention & control

INTRODUCTION: Hypertensive disorders of pregnancy are responsible for 10% to 15% maternal deaths. They also account for high perinatal morbidity and mortality. In India prevalence of eclampsia ranges from 1 in 30 to 1 in 500 pregnancies (1&2). Management of the eclamptic patient is based on 4 Principles

- 1) Control of convulsions
- 2) Control of hypertension
- 3) General management
- 4) Obstetrical management

Several drugs (Mgso_4 , phenytoin, diazepam, pethidine) are used to control the convulsions but the drug of choice is MgSO_4 .

Dr Pritchard (1955) popularized Mgso_4 regime for eclampsia / preeclampsia. Magpie trial (2002) confirmed that Mgso_4 scores over Phenytoin, diazepam in controlling convulsions. Indian women weigh much less than their counterparts in western world. Hence the doses that were suggested by western authors may be toxic for our patients. Dr. Suman Sardesai et al (2003) advocated a regime of low dose MgSO_4 . We adopted the same regime in this study.

Our purpose was to study its efficacy, advantages, its correlation with serum mgso_4 levels and to compare it with Pritchard regime.

METHODS: The present prospective study was undertaken at Krishna Institute of medical sciences, Karad (Maharashtra) It was approved by the ethical committee of the institute.

Inclusion Criteria - 1) Patients with eclampsia

2) Patients of imminent eclampsia

(i.e. pre- eclampsia with any of the associated symptoms viz. headache , epigastric pain, vomiting, visual symptoms etc.)

Exclusion Criteria: 1) Patients with associated complications like cerebrovascular accidents renal failure.

2) Patients with any other anticonvulsant treatment before admission (e.g. diazepam, phenytoin)

Regimes used - Either low dose Mgso_4 or Pritchard regime

Randomization of patients – Alternate patient was selected for low dose or Pritchard regime.

DOSAGES:

1) Low dose regime – As advocated by Dr. Suman Sardesai

Loading dose: 4gm of 50% Mgso_4 diluted in normal saline (i.e. 20 cc of 20% solution) was given IV over 4 to 5 minutes.

Maintenance dose– 2 gm. Of 50% mgso_4 IM' every 3 hours

2) Pritchard regime –

Loading dose – IV 4 gm. Of 50% MgSO_4 diluted in normal saline (i.e. 20cc of 20% solution)

- 5 gm. Of 50% mgso_4 IM in each buttock

Thus total loading dose was 14 gm. (4+5+5)

Maintenance dose – 5 gm. 50% mgso_4 IM every 4 hours

- Both regimes were continued for 24 hours after delivery or last convulsion whichever was later .

- If convulsion recurs within 30 min after loading dose, no additional MgSo_4 was required

- If convulsion occurs 30 minutes after loading dose, additional 2gms MgSo_4 was given IV

- Following observations were made with both regimes

1. Knee reflex (should be present)

2. Urine output (> 30 m 1 hour)

3. Respiratory rate(> 14/mm's)

Serum Mgso_4 levels were estimated for both regimes

First sample – 30 minutes after loading dose

Second sample – 3 hours after loading dose

RESULTS:

1) Majority of the patients were primigravida (61%), between age group 21 to 25 years (76%), with weight less than 50 kg (74%)

2) Success rate in controlling convulsions was 90% (low dose regime) There was no convulsion in Imminent eclampsia with either regime.

- 3) The average $MgSO_4$ required 54.5% less in low dose regime than that required for Pritchard regime. This reduced the cost of therapy.
- 4) The average serum mg^{++} levels with low dose regime were 3.36 mg% and 4.05 mg% with Pritchard regime.
- 5) No significant maternal or neonatal complication in any group.

CONCLUSION: Low dose $MgSO_4$ regime is as effective as Pritchard regime, with less requirement of the drug.

DISCUSSION: Pre eclampsia & eclampsia are common pregnancy complications accounting for high maternal & perinatal morbidity / mortality. Control & prevention of convulsions is an important aspect of eclampsia management.

Dr. Pritchard from Parkland Hospital USA used $MgSO_4$ anticonvulsant regime with high success rate. He commented that the dose of $MgSO_4$ should be limited in women who are low weight otherwise the drug toxicity can occur

Dr. Flower et al 5. Adjusted doses according to body weight, plasma level.

In present study 74% Patients weigh less than 50 kg The very purpose of the study was to find if lower dose of $MgSO_4$ is as efficacious as Pritchard regime.

In the study of Dr. Suman Sardesai & Present study 20 gm. of $MgSO_4$ was required in majority of cases

Rashid Begam et al 6. Required 28 gm. of $MgSO_4$ while Pritchard regime needed 44 gm. of $MgSO_4$.

The success rate in controlling convulsions was 90% in present study with low dose which is comparable with Dr. Sardesai's study (91%)

While that with Pritchard regime was 91.6%

There is controversy regarding effective therapeutic level of serum mg

It was 3.36 mg% with low dose & 4.05 mg% with Pritchard regime

These findings are consistent with that of Dr. Sardesai study (3.14 to 6) Zuspan (3 to 4) & Cruikshank (3.3to 4.4)

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1.Table - I Weight distribution

Wt.in kg.	Low dose	Pritchard	Total
<40	9	2	11(9.17%)
40to45	18	21	39(32.50%)
46to50	18	21	39(32.50%)
51to55	6	10	16(13.33%)
56to60	4	3	7(5.83%)
>60	5	3	8(6.67%)

2.Table -II Total dose of mgso₄ required (in grams)

Mgso ₄ in grams	Low dose	Pritchard
<10	5	0
11to20	39	1
21to30	15	0
31to40	1	14
41to50	0	28
51to60	0	8
61to70	0	5
71to80	0	2
>80	0	2

3. Table III Control of convulsions in both groups

Number of convulsions after treatment	Low dose		Pritchard	
	No.of pts	%	No.of pts	%
None	54	90	55	91.67
One	5	8.33	4	6.67
More than one	1	1.67	1	1.67

By applying Chi square test it is statistically insignificant (P>0.05)

4.Table - IV Average serum Magnesium levels

	Serum mg	
	Sample I	Sample II
Low dose	3.36	3.36
Pritchard	4.34	4.32
P value	<0.001	<0.001

Sample 1: 30 min after loading dose **Sample 2:** 3 hours after last dose

Applying T test it was found that there is significant difference (P< 0.001) in serum mg levels

Table V: Cost of therapy in rupees

Cost in Rs.	Low dose regime	Pritchard regime
<100	8	0
100 to 300	52	5
301 to 500	0	47
501 to 700	0	8

6.Table - VI Complications related to MgSO_4

Low dose	0
Pritchard	1

One Patient in Pritchard group had respiratory depression