# MAGNESIUM SULPHATE AND DILANTIN SODIUM AS ANTICONVULSANTS IN ECLAMPSIA

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## SUMMARY

**As Eclampsia is primarily a convulsive state, it would seem logical to use the most effective and widely used anticonvulsant drug available (WILDER et al 1977, GILMAN et al 1985). We in this study compared the efficacy of Dilantin Sodium with Magnesium sulphate in cases of Eclampsia. We found 100% efficacy of both drugs in controlling convulsions. Side effects with Magnesium sulphate were however less fetal than with Dilantin Sodium. the response of treatment on albuminuria was more encouraging with Magnesium Sulphate. Albuminuria had cleared in 92.5% cases in Magnesium Sulphate group compared to 65% in Dilantin Sodium group.**

## *INTRODUCTION*

Evidence of eclampsia as a principal cause of maternal and perinatal mortality indicates the importance of continued efforts in monitoring and reviewing the line of treatment. Dilantin Sodium is well recognised as an anticonvulsant and recent studies (Slater et al 1987) have advocated its use in the management of eclampsia. It has stabilising effect on all neuronal membranes and episodes of repetitive firing are especially suppressed (Wilder 1977).

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*Accepted for Publication on 20.07.1993.*

Use of Magnesium Sulphate in the treatment of eclampsia was first recommended by Lazard in 1925 and by Dorsett in 1976. Though the mode of action is not fully understood, the primary effect appears to be neuromuscular blockage (Donaldson, 1978).

## *MATERIAL AND METHODS*

For the study the patients selected were those admitted to UISEM Hospital, Kanpur from August '91 to May '92. The total number of patients studied were 80. Out of these 40 were treated with Dilantin Sodium and 40 with Magnesium sulphate.

Brief history was obtained from patient's

attendants with special reference to detailed obstetric history including the history of toxaemia in present or past pregnancy, detailed history of fit and also family history of toxaemia, hypertension, diabetes or nephritis.

General examination including general condition, pulse, blood pressure, temperature, respiratory rate, oedema and pallor was noted. An abdominal examination was done including fundal height, foetal heart sounds and uterine contractions. Pelvic examination was done to assess the state of cervix and pelvis.

**Group 1**

Received intravenous Dilantin Sodium. The loading dose of 500 mg. was *diluted in 200 ml saline* and administered over not less than 20 minutes. This was followed immediately by 500 mg. diluted in 200 ml saline administered over next four hours. A final dose of 500 mg in 200 ml saline administered over 4 hrs. was given 12 hrs. after initiating the therapy. The occurence of side-effects like nausea, vomiting, nystagmus, in-coordination, dysarrthria, arrhythmias and hypotension was noted.

**Group 2**

Patients received intravenous Magnesium Sulphate. *A 4 gm loading dose in 200 ml, saline was administered over* 20-30 minutes followed by a continous infusion of 4 gm. in *200 ml saline.*

The infusion was continued for 24 hrs. provided the tendon reflexes were present and urine output was more than 30 ml. per hour and respiration regular. The occurance of side effects such as nausea, vomiting, hypotension, absence of tendon reflexes, respiratory depression and arrhythmias were noted.

**Antihypertensive treatment**

In all patients antihypertensive Alpha Methyldopa was given orally in dosage of 250-

## *OBSERVATIONS*

**Table I**

**Effect on control of convulsions**

| Sl. No. | Number of Fits | Dilantin Sodium Group | | Magnesium Sulphate Group | |
|---|---|---|---|---|---|
| | | No. | % age | No. | % age |
| 1 | Before the treatment | 13 | 32.5 | 10 | 25.0 |
| | ≤ 5 | | | | |
| | 5 - 10 | 19 | 47.5 | 23 | 57.5 |
| | 10 - 15 | 8 | 20.0 | 7 | 17.5 |
| | ≥ 15 — | — | — | — | |
| 2 | With in 24 hrs. | | | | |
| | Nil | 40 | 100 | 40 | 100 |

Average number of fits before starting treatment

Group-1 7 Group-2 7

Efficacy in control of convulsions in both groups - 100%.

500 mg. thrice or four times daily.

*OBSTETRIC MANAGEMENT*

After the fits were controlled, the pregnancy was terminated by artificial rupture of membrances combined with oxytocin induction in favourable cervix and caesarean section in unfavourable circumstances.

There was significant fall in blood pressure in both groups ($P < 0.01$) but on comparing two regimens the difference is not statistically significant ($P > 0.01$).

In first group in 82.5% patients and in second group in 90% patients blood pressure fell below 150/90 mm Hg within 48 hours.

Albuminuria had cleared in 26 patients out of 40 (65%) in Dilantin Sodium group and in 29 patients out of 40 (92.5%) in Magnesium Sulphate group within 72 hours of treatment.

**Table II**

**Effect on Blood Pressure**

| Sl. No. | Blood Pressure (mm Hg.) | Dilantin Sodium Group | | Magnesium Sulphate Group | |
|---|---|---|---|---|---|
| | | No. | % age | No. | % age |
| 1 | Before treatment | | | | |
| | ≥ 170 / 110 | 7 | 17.5 | 8 | 20.0 |
| | 170 / 110 - 160 / 100 | 19 | 47.5 | 17 | 42.5 |
| | 160 / 100 - 150 / 90 | 10 | 25.0 | 12 | 30.0 |
| | 150 / 90 - 140 / 80 | 4 | 10.0 | 3 | 7.5 |
| | ≤ 140 / 80 | — | — | — | — |
| 2 | Within 24 hrs. | | | | |
| | 170 / 110 - 160 / 100 | 1 | 2.5 | — | — |
| | 160 / 100 - 150 / 90 | 16 | 40.0 | 12 | 30.0 |
| | 150 / 90 - 140 / 80 | 22 | 55.0 | 25 | 62.5 |
| | ≤ 140 / 80 | 1 | 2.5 | 3 | 7.5 |
| 3 | Within 48 hrs. | | | | |
| | 170 / 110 - 160 / 100 | — | — | — | — |
| | 160 / 100 - 150 / 90 | 7 | 17.5 | 4 | 10.0 |
| | 150 / 90 - 140 / 80 | 20 | 50.0 | 21 | 52.5 |
| | ≤ 140 / 80 | 13 | 32.5 | 15 | 37.5 |

| | | |
|---|---|---|
| Mean Blood Pressure before treatment | 1st Group - | 102.25 ± 8.65 mmHg |
| | 2nd Group - | 102.5 ± 8.58 mmHg |
| Mean Blood Pressure within 24 hrs. | 1st Group - | 89.25 ± 5.86 mmHg |
| | 2nd Group - | 87.25 ± 5.69 mmHg |
| Mean Blood Pressure within 48 hrs. | 1st Group - | 83.5 ± 6.91 mmHg |
| | 2nd Group - | 82.25 ± 6.31 mmHg |

**Table III**

**Response on Albuminuria**

| No. | Urine Albumin | Dilantin Sodium Group | | Magnesium Sulphate Group | |
|---|---|---|---|---|---|
| | | No. | % age | No. | % age |
| 1 | Before treatment | | | | |
| | + + + + | 7 | 17.5 | 9 | 22.5 |
| | + + + | 23 | 57.5 | 24 | 60.0 |
| | + + | 10 | 25.0 | 7 | 17.5 |
| | + | — | — | — | — |
| | Traces | — | — | — | — |
| | Clear | — | — | — | — |
| 2 | Within 36 hrs. | | | | |
| | + + + + | — | — | — | — |
| | + + + | 2 | 5.0 | 3 | 7.5 |
| | + + | 5 | 12.5 | 4 | 10.0 |
| | + | 7 | 17.5 | 9 | 22.5 |
| 3 | Within 72 hrs. | | | | |
| | + + + + | — | — | — | — |
| | + + + | — | — | — | — |
| | + + | 2 | 5.0 | 1 | 2.5 |
| | + | 2 | 5.0 | 1 | 2.5 |
| | Traces | 9 | 22.5 | 7 | 17.5 |
| | Clear | 26 | 65.0 | 29 | 72.5 |

## *DISCUSSION*

In our study as far as control of convulsions is concerned, no failure was reported and this was well in accordance with the results of the study by J. Domissee (1988).

There was significant fall in blood pressure with both treatment regimens ($P < .01$). In Dilantin Sodium treated group in 82.5%while in Magnesium Sulphate group in 90% blood pressure fell below 150/90 mm Hg within 48 hours of starting treatment. However, difference between the two groups was not statistically significant ($P > 0.01$). In my knowledge no such literature is available till date.

The response of treatment on albuminuria was also encouraging. Albuminuria had cleared in 26 patients out of 40 (65%) in Dilantin Sodium group and in 29 patients out of 40 (92.5%) in Magnesium Sulphate group within 72 hours of treatment. No such literature is available till date as far as I know.

## *CONCLUSION*

(1) Efficacy of Dilantin Sodium is as well as Magnesium Sulphate in control of convulsions in patients of Eclampsia was 100%.

(2) Significant fall in blood pressure occured with both treatment regimens but

difference between the two groups was not statistically significant. (P > .01)

(3) Albuminuria had cleared in 65% patients on Dilantin Sodium therapy and in 92.5% patients on Magnesium Sulphate therapy.

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