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Need for relooking into management of eclampsia

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ABSTRACT

Objective: To explore the incidence, types, profiles, gestation, therapies, maternal-fetoneonatal outcomes with special reference to conservative eclampsia management in preterm cases with live baby. **Methods:** A critical analysis of eclampsia cases over two decades was performed to explore outcomes with different therapies. **Results:** Of 64 014 deliveries, 416 cases of eclampsia were managed, giving an incidence of 0.65% of births with decreasing trends (0.79% in Block A and 0.56% in Block E). 132 (31.73%) had lytic cocktail, (58.69% in Block A and 2.66% in Block E), 76 (18.27%) had magnesium sulphate ($MgSO_4$) and pethidine or diazepam (30.43% in Block A and 5.33% in Block E), 208 (50.00%) received $MgSO_4$ and nifedipine (10.86% in Block A and 92.00% in Block E). Mean induction delivery interval with lytic cocktail was 23.2 hours (shortest), and $MgSO_4$ with sedatives, 48 hours, and $MgSO_4$ with nifedipine, 72 hours (longest). In 33 cases, induction could be postponed if babies were live, preterm and mothers' convulsions could be controlled. Lytic cocktail perinatal mortality rate (PMR) was 765.15. PMR of $MgSO_4$ with sedatives was 500. PMR of $MgSO_4$ with nifedipine was 346. **Conclusions:** Though some babies died in utero, in carefully selected cases with close supervision, pregnancy may be continued with eclampsia to increase fetal maturity without risk to mother, in settings where resources are scarce for very very low birth weight babies. Conservative management improves perinatal outcome but a careful balance of maternal wellbeing is essential.

1. Introduction

Eclampsia remains as one of the leading causes of maternal and perinatal mortality in many parts of the world[1,2]. Its management is aimed at preventing mortality and long term morbidity with primary concern for the mother for obvious reasons. So the management is directed to expedite delivery to prevent further convulsions and multiorgan damage. However, therapies now commonly used have antagonistic actions. Magnesium sulphate, an anticonvulsant, and nifedipine, an antihypertensive, are both drugs possessing tocolytic activity[3,4]. In appropriate doses, magnesium sulphate does not cause maternal fetal respiratory depression and probably enhances uterine blood flow, and nifedipine causes significant vasodilatation of the uterine arteries[5,6]. These effects of both the drugs observed while managing the cases of eclampsia gave us the idea of continuing with pregnancy by withholding induction of labour for sometime, depending on the response to therapy and fetomaternal condition especially, if the gestation was less than 34 weeks to get time to use glucorticoids to enhance the lung maturity of the baby to have better chances of survival, especially in settings where resources for care of very low birth weight babies are scarce.

The present study is a critical analysis of records of women admitted with eclampsia over two decades in order to know the outcome with different therapies with special reference to the newly adopted policy of conservative management in preterm cases with live baby especially with less than 34 weeks gestation. A watch, however, was kept on convulsions and vital functions of the mother in addition to the baby for whom this conservative management was adopted.

2. Materials and methods

An analysis of 416 cases of eclampsia managed between April 1986 to March 2010 at a rural tertiary care medical institute in Central India was conducted to explore the incidence and types of cases, their profiles, gestation, therapies and maternal and fetoneonatal outcomes with special reference to conservative management in recent past.

The cases studied were divided into 5 Blocks *i.e.* Block A (1986-1990), Block B (1991-1995), Block C (1996-2000), Block D (2001-2005) and Block E (2006-2010). Over the

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years various therapies have been used for eclampsia with changes for obvious reasons. Neither analysis of trends of outcome with a particular therapy is possible, nor can we say it is a controlled trial. So the study does have limitations but has been done for exploring the outcome, sharing the information and plan desired studies.

3. Results

Total deliveries during the period of analysis were 64 014 and 416 cases of eclampsia were managed (22.11% in Block A and 18.02% in Block E), giving an incidence of 0.65% of all births with decreasing trends (0.79% in Block A and 0.56% in Block E), 175 (42.06%) cases were referred from nearby District Hospital and Primary Health Centres (28.26% in Block A and 18.08% in Block E), 150 (36.05%) women had reported directly from home with no checkups (42.39% in Block A and 26.66% in Block E) and the rest 91 (21.87%) women had occasional antenatal checkups at the place of study (29.30% in Block A and 14.66% in Block E). These women had either reported in emergency with convulsions or had convulsions while admitted.

Out of 416 cases, 132 (31.73%) had received lytic cocktail advocated by Krishna Menon in 1961, (58.69% in Block A and 2.66% in Block E), 76 (18.27%) women had received magnesium sulphate and pethidine or diazepam, (30.43% in Block A and 5.33% in Block E) and 208 (50.00%) women had received magnesium sulphate and nifedipine, (10.86% in Block A and 92.00% in Block E) (Table 1).

The mean age of patients who had received lytic cocktail regimen, magnesium sulphate with nifedipine as well as magnesium sulphate and sedatives was around 23 years. Majority of women were primigravida in all the three groups, in lytic cocktail 81 (61.36%), in magnesium sulphate with nifedipine 128 (61.54%) and 57 (75.00%) in magnesium sulphate with sedative (Table 2).

Of those women who had received lytic cocktail, 47.73% antepartum, 38.64% intrapartum and 13.64% had postpartum eclampsia, 34.85% were of less than 34 weeks gestation and 43.94% between 34–37 weeks geatation and 102 (77.20%) women had convulsions even after institution of the treatment.

Of those who had received magnesium sulphate with sedatives, 57.89% were antepartum, 23.68% intrapartum and 18.42% had postpartum eclampsia, 18.42% were of less than 34 weeks gestation and 43.42% of them were between 34–37 weeks gestation. Ten (13.15%) women had convulsions even after the institution of therapy.

Of those women who had received magnesium sulphate with nifedipine, 57.69% were antepartum, 34.62% intrapartum and 7.69% had postpartum eclampsia. 23.08% cases were of less than 34 weeks gestation and 46.15% between 34–37 weeks gestation and 26 (12.5%) women had convulsion even after institution of the treatment (Table 3).

The mean induction delivery interval with lytic cocktail was 23.2 hours (shortest) and $MgSO_4$ with sedatives, 48 hours and with $MgSO_4$ and nifedipine, it was 72 hours (longest). In 33 cases, induction of labour could be postponed for a few days as the fetal condition was good though preterm and mother's convulsions were controlled after institution of the treatment. Careful watch was kept on blood pressure and other organ functions. Out of these 33 cases, 22 were of less than 32 weeks gestation. All these women had received $MgSO_4$ with nifedipine. Of these 33 cases, 24 later had vaginal delivery and 9 had caesarean section for various obstetric indications. However, of the total 33 cases 14 had intrauterine death while on conservative therapy, one other

Table 1
Trends in eclampsia therapy according to the years [*n* (%)].

Year	$MgSO_4$ + sedative	Lytic cocktail	$MgSO_4$ + nefidipine	Total
1986–1990	28 (30.43)	54 (58.69)	10 (10.87)	92 (22.12)
1991–1995	22 (25.88)	43 (50.59)	20 (23.53)	85 (20.43)
1996–2000	12 (14.46)	19 (22.89)	52 (62.65)	83 (19.95)
2001–2005	10 (12.35)	14 (17.28)	57 (70.37)	81 (19.47)
2006–2010	4 (5.33)	2 (2.66)	69 (92.00)	75 (18.03)
Total	76 (18.27)	132 (31.73)	208 (50.00)	416 (100.00)

Table 2
Eclampsia therapy according to the age and parity.

Age	Parity	Lytic cocktail	$MgSO_4$ + nifidipine	$MgSO_4$ + sedative	Total
<19	Primigravida	20	27	6	53
20–24	Primigravida	36	56	30	122
	Multigravida	25	33	8	66
25–29	Primigravida	15	29	17	61
	Multigravida	9	17	6	32
>30	Primigravida	10	16	4	30
	Multigravida	17	30	5	52
Total	416	132	208	76	416

Table 3
Gestation, parity and type of eclampsia with perinatal outcome [*n* (%)].

Parameters		Lytic cocktail (*n*=132)	$MgSO_4$ + nifidipine (*n*=208)	$MgSO_4$ + sedative (*n*=76)
Gestation (weeks)	<34	46 (34.85)	48 (23.08)	14 (18.42)
	34–37	58 (43.94)	96 (46.15)	33 (43.42)
	>37	28 (21.21)	64 (30.77)	29 (38.16)
Parity	Primigravida	81 (61.36)	128 (61.54)	58 (76.32)
	Multigravida	51 (38.64)	80 (38.46)	18 (23.68)
Type of eclampsia	Antepartum	63 (47.73)	120 (57.69)	44 (57.89)
	Intrapartum	51 (38.64)	72 (34.62)	18 (23.69)
	Postpartum	18 (13.64)	16 (7.69)	14 (18.42)
Perinatal outcome	Alive at discharge	31 (23.49)	136 (65.38)	39 (51.32)
	Neonatal death	21 (15.91)	34 (16.35)	12 (15.79)
	Still birth	80 (60.61)	38 (18.27)	25 (32.89)

Table 4
Cases managed conservatively.

No. of cases	Parity and gestation at admission (Weeks)	Gestation at induction (Weeks)	Mode of delivery	Admission to delivery interval (Days)	Perinatal outcome
1	Primi (32)	34	Vaginal	14.2	Alive on discharge
2	G2A1 (33)	36	Caesarean section	21.1	Alive on discharge
3	G2P1L1 (33)	36	Vaginal	21.3	Alive on discharge
4	Primi (30)	34	Vaginal	28.2	Still birth
5	Primi (31)	35	Caesarean section	28.3	Alive on discharge
6	G2A1 (32)	34	Vaginal	14.1	Neonatal death
7	Primi (33)	37	Caesarean section	28.0	Alive on discharge
8	Primi (33)	36	Vaginal	21.2	Alive on discharge
9	Primi (33)	36	Vaginal	21.2	Alive on discharge
10	G2P1L1 (30)	36	Vaginal	55.0	Alive on discharge
11	Primi (33)	36	Vaginal	19.0	Alive on discharge
12	Primi (33)	36	Caesarean section	18.0	Alive on discharge
13	Primi (30)	34	Vaginal	28.0	Intrauterine death
14	Primi (32)	35	Vaginal	19.0	Intrauterine death
15	G4P1L1A2 (31)	33	Vaginal	11.0	Intrauterine death
16	Primi (26)	32	Vaginal	43.0	Intrauterine death
17	G3P2L2 (33)	36	Vaginal	21.0	Alive at discharge
18	G3P1L1 (23)	26	Vaginal	23.0	Intrauterine death
19	Primi (30)	34	Caesarean section	27.0	Neonatal death
20	G2P1L1 (30)	33	Vaginal	23.0	Intrauterine death
21	Primi (32)	35	Caesarean section	22.0	Alive at discharge
22	G2P1L1 (25)	28	Vaginal	17.0	Intrauterine death
23	Primi (26)	34	Vaginal	52.0	Intrauterine death
24	Primi (30)	35	Vaginal	32.0	Intrauterine death
25	Primi (33)	36	Caesarean section	17.0	Alive at discharge
26	G4P3L3 (28)	33	Caesarean section	35.0	Neonatal death
27	G3P1L1 (30)	36	Vaginal	39.0	Alive at discharge
28	Primi (25)	30	Vaginal	35.0	Intrauterine death
29	Primi (33)	36	Caesarean section	16.0	Alive at discharge
30	Primi (26)	32	Vaginal	40.0	Intrauterine death
31	G3P1L1 (29)	34	Vaginal	31.0	Intrauterine death
32	Primi (24)	30	Vaginal	45.0	Intrauterine death
33	Primi (28)	32	Vaginal	24.0	Intrauterine death

had fresh still birth, 3 neonatal deaths occured and 15 babies were alive at discharge (Table 4).

Out of 132 cases who had received lytic cocktail regime, 80 (60.61%) had still births (61.11% in Block A and 50.00% in Block E) and 21 (15.91%) babies died after birth (16.66% in Block A and none in Block E) with perinatal mortality rate (PMR) of 765.15 (still birth + neonatal deaths/thousand births). Out of 76 cases who received magnesium sulphate with sedatives, 25 (32.89%) had still births (35.71% in Block A and 25.00% Block E) and 12 (15.79%) babies died after birth (21.00% in Block A and none in Block E) with PMR of 500. Of 208 women who had received magnesium sulphate with nifedipine, 38 (18.27%) had still births (30.00% in Block A and 16.00% in Block E) and 34 (16.35%) babies died after birth (20.00% in Block A and 14.00% in Block E) with PMR of 346.15.

4. Discussion

Eclampsia is a grave condition for the mother as well as the baby. The need to be more vigilant becomes imperative because of atypical modes of presentation[7]. However, mother's well being is always a priority. Day to day management of eclampsia is based on the concept that once convulsion occurs, the woman must deliver vaginally or by cesarean section without any delay. She either has spontaneous labour or is induced because of dangers of persistence or recurrence of convulsions and multiorgan damage[5,6]. However, in case of very preterm pregnancy with live fetus, if convulsions can be controlled and the woman gets stabilized, continuation of the pregnancy for a few days/weeks may be considered with the hope of delivering little mature baby, especially in the settings where resources for care of very very low birth weight babies are scarce. However, this strategy must be weighed against the potential risk conferred by such a strategy[4,8,9]. Not only the underlying disease process might flare up, but there is considerable risk of baby dying in utero or become undernourished as happened in some of our cases. Also spontaneous premature labour can still occur.

Antepartum eclampsia, lower gestational age, more convulsions, raised blood pressure, elevated urine albumin, preterm vaginal deliveries, low birth weight with lower apgar score had an adverse perinatal outcome in terms of higher perinatal deaths[2].

The management with $MgSO_4$ and nifedipine with their tocolytic effect leading to the delay in uterine activity and mother and baby doing well had given us the idea to critically relook into the management plans of women with eclampsia and postpone expediting delivery till minimum 34 weeks with a watch on vital organ function and of course on the baby for whom this strategy was undertaken. Induction of labour was done if maternal condition deteriorated or fetal distress was detected. Out of 416 cases of eclampsia, 33 (7.93%) cases were managed conservatively. Out of these 33 cases, 22 were less than 32 weeks gestation. However, finally 14 women did have intrauterine death, one woman later had fresh still birth. Three neonatal deaths occurred and the rest 15 mother-infant pair were discharged in good health with no obvious residual morbidity. Mean admission delivery interval in these cases was 21.9 days.

All the women who received magnesium sulphate and nifedipine responded well with significant reduction in the persistence of convulsions compared with those treated with other regimens with better outcome, less admissions to medical intensive care unit (MICU), need for ventilatory support, which is similar to the studies by Ohah *et al*[10-13]. Overall PMR was 765.15 in lytic cocktail regime, used earlier, 500 in $MgSO_4$ with sedative regime. Comparison is not possible, nor the trends as over the years strategies have been changing and there has been significant improvement in the care of the critically ill.

Despite promising benefits of calcium supplementation and aspirin use cases on maternal morbidity and eclampsia in high risk cases, further work is needed to ascertain their benefits in relation to stillbirths[14].

Though some babies died in uterus and more research is needed, we believe that in carefully selected cases with close supervision, pregnancy may be continued in women with eclampsia to increase fetal maturity without increasing the risk to the mother, in settings where the resources are scarce for care of very very low birth weight babies. This requires close monitoring of maternal and fetal condition in the hospital or nearby and with a close watch on vital systems. Conservative management improves the perinatal outcome but must be carefully balanced with maternal well being.

Conflict of interest statement

We declare that we have no conflict of interest.

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