

Eclampsia in a Teaching Hospital: Incidence , clinical profile and response to Magnesium Sulphate by Zuspan's regimen.

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Abstract: Aims and objectives of the study: 1) To study the incidence of eclampsia at Shri Dharmasthala Manjunatheshwara (SDM) Medical College & Hospital ,Sattur, Dharwad, Karnataka. 2) To study the clinical profile,maternal and perinatal outcome in eclamptic patients. 3)To study the effect of MgSo4 by Zuspan's regimen in eclampsia which is been used in our hospital. Methods: Analysis of case records of all eclampsia cases from the study period of January 2006 to September 2012, a retrospective study.

Results : There were a total of 13740 deliveries and 100 cases of eclampsia during the study period. The incidence of eclampsia was found to be 1% in our hospital. There were a total of 34 maternal deaths during the study period, out of which four were due to eclampsia , giving a case fatality rate of 4% and maternal mortality ratio of 11.7%. Total no of perinatal deaths due to eclampsia was 19, hence the perinatal mortality rate for eclampsia was 184/ 1000.Majority of the patients were unbooked, 95 cases (95%). 79 % of patients were primigravidas and 85 % of patients were less than 25 years of age. Antepartum eclampsia was seen in 56 patients (56%) , intrapartum eclampsia in 26 patients(26%) and postpartum eclampsia in 18 patients(18%).Emergency Cesarean section was a common mode of delivery, done in 45 patients(45.4 %),54 patients had vaginal deliveries (54.5%), 1 patient died before delivery.98 patients received MgSO4 by Zuspan's regimen and only 2 patients had recurrence of convulsion after the start of treatment .Two patients of postpartum eclampsia had features of renal failure and thus did not receive MgSO4 in the study period.

Conclusion : Eclampsia continues to be an important cause of maternal and perinatal morbidity and mortality.This is due to lack of proper antenatal care, low socio economic condition and lack of education. MgSo4 is the anticonvulsant of choice and low dose Zuspan's regimen of Mgso4 is effective in the management of eclampsia.Early presentation and timely decision to terminate pregnancy will improve the maternal and perinatal outcome.

Key Words :Eclampsia, maternal mortality and magnesium sulphate.

I. Introduction

Eclampsia is defined as the development of convulsions and / or unexplained coma during pregnancy or postpartum in patients with signs and symptoms of preeclampsia. Eclampsia is associated with serious maternal and perinatal complications . The incidence of eclampsia in developed countries range from 1 in 2000 to 1 in 3448 pregnancies which is much lower than in developing countries like India..¹The incidence of eclampsia in India has been quoted as 1.56%².Majority of cases of eclampsia are young primigravidas and those with no prior antenatal care .Though not all cases of eclampsia can be prevented , majority of cases can be prevented by early detection and effective treatment of preeclampsia, for which good ANC services are needed³.Magnesium Sulfate is the drug of choice for the prevention and treatment of convulsions in eclampsia which was conclusively proved by the Collaborative Eclampsia Trial⁴.The two most widely used regimens of magnesium sulfate administration are the intramuscular (IM) regimen popularized by Pritchard⁵ and the intravenous (IV) regimen recommended by Zuspan⁶.In our hospital IV Zuspan's regimen is used and we wanted to evaluate the effectiveness of this regimen in our population and study the clinical profile, maternal and perinatal outcome in eclamptic patients.

II. Materials and Methods

This is a retrospective study of all cases of eclampsia between the study period of January 2006 to September 2012. Case records were reviewed. The Intervention strategy used for eclampsia patients in our hospital is as follows:

- 1) Mgso4 was the anticonvulsant used. IV Zuspan's regimen was followed, loading dose of 4 gm Mgso4 as 20% solution was given as slow IV bolus (over 5- 10 min).Maintenance dose of 1 gm Mgso4 infusion / hr

was given using the infusion pump till 24 hr after delivery or after last convulsion, whichever was latter. If there was recurrence of convulsion , 2 gm of Mgso4 as 20 % solution was given over 5- 10 min .

- 2) Oral nifedepine or iv / oral labetalol was given at regular interval to achieve the desired level of systolic BP of < 160 mm of Hg and diastolic BP of < 90- 100 mm of HG
- 3) Once patient was stabilized , termination of pregnancy was planned . The obstetrician incharge of the patient, decided.either for induction of labour , augmentation of labour or cesarean section depending on the clinical situation.

III. Results

There were 100 cases of eclampsia in our series out of a total deliveries of 13740. The incidence of eclampsia in our hospital was found to be 0.7% or 7 / 1000 deliveries. Eclampsia was found to be more common in young patients with age < 25 yrs .

Table 1 : Age distribution and Parity.

Age in yrs	Primigravida , n (79) ,	%	Multigravida, n (21) ,	%
15 - 20	31,	31	9,	9
21 - 25	38,	38	7,	7
26 -30	7,	7	3,	3
31 -35	3,	3	1,	1
> 35	--	--	1,	1
	79 patients		21 patients	

Table 2 :Type of eclampsia and maternal outcome

Type of eclampsia	Number	Alive	Dead
Antepartum	56	53	3
Intrapartum	26	26	1
Postpartum	18	18	--

Most of the patients developed eclampsia before the onset of labour.

Table 3: Antenatal Care

No ANC	(n)	%
	45	45
Somesort of ANC	55	55
Unbooked at our hospital	95	95
Booked at our hospital	5	5

Most of the patients were unbooked with us and 45% of patients did not receive any antenatal care.

Table 4: Gestational age in weeks of patients at the onset of convulsions.

Gestational age in weeks	(n)	%
20- 25	--	--
26- 31	11	11
32- 37	34	34
> 37	55	55

Table 5:Blood pressure at presentation.

BP in mm of Hg	(n)	%
Severe (160/110)	68	68
Mild (160/110)	20	20
Normal	12	12

Table 6 : Mode of delivery and maternal outcome

Mode of delivery	(n)	%	Alive (n)	%	Dead (n)	%
Vaginal	50	50	49	49	1	1
Cesarean section	45	45	43	43	2	2
Forceps / ventouse	4	4	4	4	--	--
Undelivered	1	1	--	--	1	1

Table 7: Perinatal outcome.

	(n)	%
Total deliveries	99	
Total births	102	
Undelivered	1	1
Total live births	94	94
Total stillbirths	8	8
Neonatal deaths	11	11

83 babies went home at discharge. There were 19 perinatal deaths in eclampsia patients, giving a perinatal mortality rate of 184 / 1000. There were 2 twin gestations.

Table 8: Number of convulsions before the start of anticonvulsant treatment & maternal outcome.

Number of convulsions	(n)	Alive	Dead
1-2	38	38	--
2-5	49	49	--
>5	12	9	3
Coma	1	--	1

There were maternal deaths in the group of patients who had > 5 convulsions and who presented in comatose state.

Table 9: Fit to delivery interval & maternal outcome.

Fit to delivery interval in hrs	(n)	Live	Dead
< 6	29	29	---
6- 12	52	50	2
12-24	18	17	1
>24	---	---	--
Undelivered	1	---	1

Patients who delivered in < 6 hrs did not have any maternal deaths.

Table 10: Mode of delivery & maternal & fetal outcome.

Mode of delivery	(n)	Maternal Alive , Dead	Fetal Alive , Dead
Vaginal	50	49, 1	36 14
Cesarean section	45	43, 2	42 3
Forceps/ventouse	4	4, --	2 2
Undelivered	1	-- 1	-- --

Table 11 Maternal complications

Complications	(n)
Pulmonary edema	2
Cerebrovascular Accidents	2
Acute renal failure	2
HELLP syndrome	7
Abruption placentae	2
DIC & MODS	3
ARDS	2
PPH	6
Aspiration pneumonia	1
Postpartum psychosis	1
Cortical blindness	1
Death	4

IV. Discussion.

The incidence of eclampsia in our study was 7/1000 deliveries ie 0.7 %, which is less than that described by Rajashri et al (1.82 %), a study conducted in a tertiary hospital in Bijapur , a neighbouring district

⁷However, the incidence of eclampsia is much higher than that of developed countries like the United Kingdom(UK), where eclampsia complicates 0.05 % of total deliveries ⁸.The incidence of eclampsia in Eastern India as quoted by Singh et al is 3.2% which is higher than ours ⁹.

Eclampsia was more commonly seen in young pregnant women (85%) and primigravidas (79%) which is similar to a study done by Acharya G et al (71.42%) ¹⁰.

95% of patients of eclampsia in our hospital were not booked with us. 45% of patients had no antenatal care and around 55% of patients had some sort of antenatal care. Lack of antenatal care is one of the important risk factors for the development of eclampsia which is proved by many studies. 93.99% of patients had no ANC as per S.Jain et al and 76.66% had no ANC as per S.Swain et al ¹¹.

5% of our booked cases had eclampsia. According to studies conducted in developed countries, the percentage of eclampsia considered to be unpredictable ranged from 31% to 87 % and this is because of atypical presentation of eclampsia ie abrupt onset, development of convulsions while receiving prophylactic Mgso4 or onset of convulsions after 48 hrs of delivery or in patients without hypertension or proteinuria. But in developing countries, the preventable causes of eclampsia contribute to most cases of eclampsia because of poor ANC services.

56% of eclampsia were Antepartum,26% were intrapartum and 18% were postpartum. In the UK, 44% of eclampsia were postpartum and had lower incidence of antepartum eclampsia which could be due to good ANC surveillance. Pathogenesis of postpartum eclampsia is less understood ¹².

Eclampsia was seen in 55% of patients at term gestation in our study which is similar to a study done by Marinakhanum et al ie 53% at term gestation and 43% at near term gestation ¹³.

68% of patients had severe hypertension at presentation, 12 patients had normal BP recording at presentation. Mattar F et al quoted 16 % of the patients had no hypertension, 20% -54% had severe hypertension and 30%-60% had mild hypertension. Hypertension is considered to be the hallmark for the diagnosis of eclampsia. The diagnosis of eclampsia is usually associated with proteinuria(at least 1+ on dipstick).In our series 44% of patients had 4+, 26% had 3+, 16% had 2+, 6% had 1+ and 8% had trace which is similar to the study done by Mattar F et al ¹⁴.

Cesarean section was a common mode of delivery in our series(45%) which is similar to study done by Sibai BM et al ¹⁵.Eclampsia per se is not an indication for cesarean section and mode of delivery had no significant effect on the outcome of the eclamptics as per Ibrahim A et al. ¹⁶

The decision to perform cesarean section should be based on fetal gestational age, fetal condition, presence of labour, cervical Bishop score and maternal condition.

Labour is usually induced with prostaglandins and early rupture of membranes and the obstetrician can monitor and await vaginal delivery once the patient is stable and convulsions are under control. Judicious and timely selection of cases for either vaginal delivery or cesarean section is going to improve the maternal and perinatal outcome.

All our patients received Mgso4 as per Zuspan,s regimen to prevent convulsions.Only 2 patients had recurrence of convulsions while on Mgso4 regimen. Recurrence of fits increases the maternal morbidity. Efficacy of Mgso4 in prevention and treatment of eclamptic convulsions is time tested, however, protocols and dose of Mgso4 are not evidence based and narrow therapeutic index and toxicity is still a major concern in clinical use. Pritchard regimen was formulated for women of the West with high BMI but he also suggested low dose in women with small body size ¹⁷. Witlin et al also recommended dose adjustment according to patients weight or body mass index ¹⁸. Low dose regimen proved to be effective in prevention and control of convulsions in our population similar to a study done by Bangal V et al ¹⁹. 2 patients with renal failure recieved phenytoin as the anticonvulsant. Delay in presentation to the hospital and more number of convulsions definitely adds to maternal morbidity and mortality as shown in table 8 and 9.

Out of 34 maternal deaths during the study period, 4 were due to eclampsia, a case fatality rate of 4 % and 9 deaths were due to other complications of severe pregnancy induced hypertension. There are increased rates of maternal morbidities due to eclampsia as shown in table 11. The most common causes of maternal death are intracranial bleeding, pulmonary edema and acute renal failure secondary to abruption placentae. Two of the maternal deaths were due to intracranial bleeding and two other patients died due to pulmonary edema and acute renal failure secondary to abruption placentae and HELLP syndrome respectively. There were 19 perinatal deaths due to eclampsia. The most common causes of perinatal death are prematurity, fetal growth restriction, fetal asphyxia and acidosis ²⁰. According to the Royal College of Obstetricians and Gynaecologists(RCOG) good antenatal services will detect and treat preeclampsia and thus reduce the incidence of eclampsia. Prompt and timely treatment of eclampsia will reduce the maternal and perinatal morbidity and mortality ²¹.

V. Conclusion.

Eclampsia continues to be an important cause of maternal and perinatal morbidity and mortality. This is due to lack of proper antenatal care, low socio economic condition and lack of education. MgSo4 is the

anticonvulsant of choice and low dose Zuspan's regimen of Mgso₄ is effective in the management of eclampsia. Early presentation and timely decision to terminate pregnancy will improve the maternal and perinatal outcome.

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