MANAGEMENT OF ECLAMPSIA

(A Critical Analysis of 186 Cases)

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SUMMARY

A critical analysis of 186 cases of eclampsia mainly treated by intravenous diazepam drip have been presented and attempt has been made to find out co-relation between our observations and maternal prognosis. Inspite of satisfactory control of convulsion with the drug regime maternal mortality had been significantly high, 5.9 per cent and perinatal loss was 38.41 per cent.

Control of convulsion does not mean control of the disease.

Introduction

A critical analysis of some clinical aspects of and effects of therapy on 186 cases of eclampsia mainly treated by intravenous diazepam drip is presented and attempt is made to find out co-relation between them and maternal prognosis.

In collaboration with the junior author treatment of eclampsia mainly with diazepam had been started in our units at Chittaranjan Seva Sadan College since September, 1976 and upto 1984, 186 cases had been treated. Details of methods and procedure have appeared on the literature before. (Ghose and Das 1980); hence are not repeated. It may also be mentioned in connection with timing and method of obstetric management as before. Besides diazepam 123 patients received intramuscular pethidine and 87, frusemide intramuscular or intravenous by choice, and 33 had shots of phenergan and/or largactil before the diazepam treatment could be started.

As is common in all other reports on eclampsia almost all cases were emergency admissions without any antenatal care. In 97 cases (61 per cent) convulsion occurred within 36 weeks of gestation according to history or estimation. Earliest period was 28 weeks in one case only and there was no post dated pregnancy. In 27 cases period of pregnancy was not recorded. The series included one case of multiple pregnancy.

One hundred and forty nine patients were admitted in unconscious or semiconscious state or developed the condition on onset of convulsion after admission. One hundred and sixty seven patients were hypertensive on admission and another nine developed the condition after

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convulsion on admission. Highest blood pressure recorded was 250/170 mm of Hg and in eleven cases this was 210/110 mm of Hg or above. Only 1 patient remained normotensive throughout. Temporary rise of blood pressure by 20 systolic or 15 diastolic occurred during treatment in 45 cases (24.19%). One hundred and three patients had pulse rate within 100 per minute and 37 more than 120. Rise in pulse rate by more than 10 per minute was noted in 56 patients (31.03%) during treatment. Respiration rate was within normal range in 69 between 21 and 25 per minute in 56, between 26 and 34 in 57 and 35 or more in 13 patients.

Pulmonary moist sounds appeared in or present on admission in 98 patients and 10 patients were admitted with cyanosis or developed later, of whom 4 expired.

One hundred and forty seven patients (79.03%) were admitted after convulsion and the rest 39 (20.97%) had their first convulsion in the hospital.

Ou of one hundred fifty ante and intrapartum cases, one died undelivered of the remaining 149 cases including one case of twins, 80 (53.69%) delivered spontaneously, 65 (43.63%) had forceps delivery and 4 (2.67) were delivered by caesarean section for obstetric indications. Labour was on average, easy and quick, Syntocinon has not been used in any case.

Maternal Mortality (*Table* 1)

There had been 11 deaths including 1 case of multiple pregnancy in the present series, resulting in a maternal mortality of 5.9 per cent. Two cases were post-partum. It is difficult to pin point the cause of death correctly in individual case as no post mortem examination had been performed and multiple adverse features were present in each case.

Pulmonary oedema was present in 7 and cyanosis in 4. Hypertension developed in 2 cases, anuria in 2 and broncho pneumonia in 1. Two patients had definite clinical features of cerebral haemorrhage.

Hence out of 11 cases, 6 seemed to have died from cardiorespiratory failure, 2 from renal failure, 2 from cerebral haemorrhage and 1 from pulmonary infection.

TABLE I

Maternal Mortality and Perinatal Mortality in Eclampsia as Published in Some Indian Reports in Last Ten Years

Authors	No. of cases	Maternal mortality (per cent)	Perinatal mortality (per cent)
Devi *et al* (1976)	369	10.3	47.35
Kawathekar (1976)	30	3.3	16.6 (corrected)
Singh and Misra (1977)	96	2.08	14.58
Dutta and Biswas (1978)	188	17.5	37.23
Yadab and Nayak (1980)	54	7.4	34.00
Dutt (1981)	75	10.5	36.8
Goswami and Dawn (1981)	163	13.5	38.00
Gun *et al* (1982)	293	9.5	31.74
Agarwal *et al* (1983)	116	7.75	50.8
Ghose and Das (present series)	186	5.9	38.41

It may be said that excepting in one case who died 5 hours after admission undelivered, there had been sufficient time for treatment in the other cases from 12 hours to 9 days. Still they could not be saved.

Perinatal Mortality

Out of 151 babies of 150 ante and intrapartum cases including 1 case of multiple pregnancy, 27 were still born and 31 early neonatal deaths resulting in a perinatal loss of 58 babies, i.e. 38.41 per cent. Prematurity or low birth weight was the most important single contributing factor in the heavy perinatal loss.

Clinical Features and effect on Maternal Prognosis

Out of 186 cases 150 (80.65) were ante and intra partum and 36 (19.35%) were post partum. Ante and intra partum cases have been grouped together as these could not be concretely defined in many cases. The proportion of post partum cases agrees with other reports.

That in nearly 1 in 5 cases the first convulsion starts of the delivery is a strong evidence that termination of pregnancy mortality in the combined ante and intra partum group and that in the postpartum group is more or less similar, 6 per cent and 5.5 per cent respectively and distribution of death cases is also proportioned to their pregnancy.

But this does not agree with the general opinion that post partum cases are prognostically better. Bhose (1964) observed 1.6 per cent maternal mortality in post partum and 4.3 per cent in antepartum cases. Observations of Dutt and Biswas (1978) from he same hospital also tallied with those of Bhose (1964). On the other hand, relatively higher risks in the post partum cases had also been reported by Konar *et al* (1975) and Agarwal *et al* (1983).

Age

In the present series there were 69 (37.1) teen agers and 93 (50%) between 20 and 24 years and 24 (12.9%) 25 years and above.

Gravidity

Though like others most of the cases in the present study were primigravidas our incidence, 82.79% much higher than of other (Lahiri, 1970, Dutta and Biswas 1978, Gun *et al* 1982) with us there were 20 second pregnancy cases (10.75%) and the remaining 12 cases (6.46%) were scattered between third and seventh pregnancies.

Again, as opposed to the findings of Lahiri (1971) and Konar and Das (1975), maximum maternal mortality in our experience was in the second pregnancy group (15%) and it was 5.19% in the first pregnancy cases. This is a very unusual finding may be due to small number of cases in these second pregnancy group.

Number of Convulsions before Admission

As stated before in 39 cases (20.9) the first convulsion occurred in the hospital. Eighty patients (43.01%) had 1 to 4. 54 (29.03%) had 5 to 10 and 13 .6.09%) had more than 10 convulsions before admission.

It is significant to note from Table II that maternal mortality in the cases where the first convulsion started in the hospital was considerable (5.89%) and even higher than that in those who were admitted after 1 to 4 convulsions (2.5%).

TABLE II

No. of Convulsions Before Admission

No. of Convulsion	Nil	1-4	5-7	8-10	upto 10	11-15	16 & more	More than 10
No. of cases	39 (20.97%)	80 (43.01%)	33 (17.74%)	21 (11.29%)	173 (93.01%)	8 (4.3%)	5 (2.69%)	13 (6.99%)
Maternal Mortality	2 (5.8%)	2 (2.5%)	4 (12.12%)	1 (4.76%)	9 (5.2%)	1 (12.5%)	1 (20%)	2 (15.38%)

It may be that those 2 cases who were lost after their first convulsion in the hospital and when treatment could be started immediately were unusually severe. Again, maternal mortality was much less when number of convulsions were between 8 and 10 than that in the group who had between 5 and 7 convulsions. This is also difficult to explain. But if we consider all cases who had nil to 4 convulsions before admission we observe maternal mortality in the group to be 3.37% which is much lower than that observed in the rest of the cases together, 10.41%. Further those who had more than 10 convulsions before admission, though the number of such cases is very small in the study appear to run a very high risk of mortality (15.38%). Distribution of deaths (18.18%) is also disproportionately higher in the latter group.

So it may be reasonable to infer that the number of convulsions before admission or treatment do influence the maternal prognosis, specially if the number be more than 10. But even the first convulsion in the hospital carries significant risk to the mother. Gun *et al* (1982) have observed correlation between the number of convulsions before admission and maternal prognosis.

Convulsion Delivery Interval and Maternal Prognosis (Table III)

It appears from Table III study that the incidence of maternal mortality if the devery is delayed beyond 12 hours, is higher. Mortality is very high (33.33%) when the delivery occurred after 24 hours. The number of cases in the last group was only 6 and too small to reflect the correct picture. Those cases were admitted before labour and labour was induced as soon as the cervix permitted by ruptur-

TABLE III
First Convulsion Delivery Interval in 149 Cases; One Case Died Undelivered

Interval in hours	Within 12	Between 13-24	Within 24	More than 24
No. of cases	79 (53.02%)	64 (42.95%)	143 (95.97%)	6 (4.02%)
Maternal Mortality	2 (2.53%)	4 (6.25%)	6 (4.19%)	2 (33.33%)

ing the membranes. None went beyond 4 days after onset of convulsion.

Almost all authors so far referred to have observed definite correlation between maternal mortality and convulsion delivery interval excepting Agarwal *et al* (1983).

Control of Convulsion and Maternal Prognosis

In 90 cases (48.39%) there was no recurrence of convulsion after treatment had been started and maternal mortality in that group had been 4.4%. Though this was 7.29% much higher in the recurrent group, it is important to note incidence of maternal mortality was significant even when there had been no recurrence of convulsion. Bhose and Mitra (1962) had found much larger incidence of recurrrence with lesser incidence of maternal mortality and relatively larger incidence of maternal mortality in the non-recurrent group. Menon (1953) with thiopentone treatment had only 9.5% recurrence but 16.5% maternal mortality. But in Menon's last series (1961) recurrence was in 15% only with low maternal mortality. Comparing the recurrence rate and maternal mortality incidence of various authors and from the above discussion it is evident that recurrence of convulsion after treatment does not always suggest worse prognosis and neither complete control guarantees recovery. In the present series, 4 deaths out of 11 occurred in patients who had no convulsion after treatment.

In 110 cases (59.14%) (Table IV) more than half control of convulsion was almost immediate but maternal mortality was significant, (4.54%). Though the incidence of maternal mortality has been observed to rise with the time required to control convulsion till 12 hours, strongly enough there had been no mortality when convulsion had been controlled after 12 hours as opposed to what Gun *et al* (1982) had observed. Again this may be due to the small number of cases in that group in the present study.

From the above observations it is clear that control of convulsion was satisfac-

TABLE IV
Control of Convulsion in Relation to Time After Starting Treatment

No. of cases	Immediate 110 (59.14%)	1-6 hours 51 (27.41%)	7-12 hours 19 (10.22%)	13-18 hours 6 (3.23%)
Maternal Mortality	5 (4.54%)	4 (7.84%)	2 (10.52%)	nil

tory. But even immediate control of convulsion or non-recurrence of convulsion does not after improve the prognosis. So there must be some other factor or factors besides repeated convulsion which might be responsible for the deterioration of the maternal condition. Control of convulsion does not mean control of the diseases.

Control of Convulsion after Delivery and Maternal Prognosis (Table V)

Immediate and quick delivery is advocated with the idea that convulsion ceases and condition improves following delivery. In 136 cases (73.52%) as seen in Table IV convulsion had been completely controlled following delivery and only 5 cases, there had been 10 or more convulsions. But incidence of maternal mortality was similar amongst those who had nil to 3 convulsions (5.14% to 5.55%). Interestingly enough there was no mortality when the number of convulsions was between 4 and 9 in 7 patients. Only in those when the number was 10 or more, though the number of cases was very small, maternal loss was disproportionately high (20%).

In our 7 cases out of 10, who died after delivery, there was no convulsion following delivery, I had only 1 and another 3. Only 1 out of these 10 had more than 3 convulsions after confinement (14 convulsions). It very clearly shows that though convulsion had been controlled following delivery, these patients could not be saved. Dutt and Biswas (1978) in their large series had observed that only 46.8% of their cases in less than half convulsions ceased after delivery.

Hence delivery does not often end convulsive sizures and cessation of convulsion following delivery does not necessaily lead to recovery.

Number of Convulsions and Maternal Prognosis

It is the general belief that maternal prognosis is directly proportional to the number of convulsions. We also observe that maternal mortality rises after 3 convulsions and after 10 or more, the rise is very steep.

On the other hand, of our 7 patients out of 11 who died, number of convulsions did not exceed 9. One patient had died after 1 convulsion only, one had 2 and another 4, again 2 patients who had 30 convulsions each did survive.

Hence it is important to remember that the maternal condition may be severe enough with lesser number of convulsions also.

TABLE V
No. of Convulsions After Delivery

No. of convulsion	Nil	1	2-3	4-6	7-9	10 or more
No. of cases	136 (73.52%)	19 (10.27%)	18 (9.73%)	5 (2.7%)	2 (1.08%)	5 (2.7%)
Maternal Mortality	7 (5.14%)	1 (5.26%)	1 (5.55%)	nil	nil	1 (20%)

One patient died before delivery
In 7 deaths out of 10 (70%) convulsion after delivery—nil.
In 3 deaths out of 10 (30%) convulsion Recured after delivery.
In only 1 death out of 10 (10%) convulsion after delivery—more than 9(12).

Control of Blood Pressure and Maternal Prognosis

Control of blood pressure was considered satisfactory if the blood pressure was brought down to and maintained around 140/90 mm of Hg. or the systolic pressure brought down by 30 mm of Hg. and diastolic by 15 mm of Hg.

Though no seperate hypertensive drug had been used, control of blood pressure may be considered satisfactory with the treatment as in 69 patients (39.2%) it was controlled within 6 hours and in 117 (66.47%) within 12 hours and in 168 (89.88%) within 24 hours.

Strangely enough in those remaining 18 cases, where the blood pressure was not controlled within 24 hours, no patient was lost. But a definite rise in the maternal mortality has been observed with delay in the control upto 24 hours. All patients who expired were hypertensive and in all of them blood pressure was controlled. There was no case of hypotension as a result of treatment.

It is difficult to point out howfar failure to control the blood pressure is releted to maternal prognosis. Menon (1962) found good maternal result with control of blood pressure only in 60% of cases. Bhose and Mitra (1962) had higher maternal mortality (4.6%) when control of blood pressure was satisfactory than when it was not 3.22%.

Renal Function and Maternal Prognosis

Only 16 patients (8.61%) developed oliguria in the first 2 days after convulsion. Mortality was much higher amongst them (12.5%) than in those where renal function was satisfactory (4.71%), though 8 patient died with satisfactory renal function.

Though the number of cases of oliguria is proportionately small maternal mortality amongst them (12.5%) is definitely much higher that in other group (4.71%). This apparently suggests co-relation between maternal prognosis and renal function.

Lahiri (1970) had also observed that maternal prognosis and suppressed renal function were corelated.

Unconsciousness

Depth of unconsciousness could not be qualified but improvement was noticed within 6 hours of starting treatment excepting in the few cases who had convulsions in quick succession and on fatal cases. All patients excepting the fatal cases, were conscious within 24 hours of the last convulsion.

All patients who died remained unconscious. Persistent unconsciousness is an unfavourable omen.

Comments

What follows from the analysis and discussion is enough to suggest the unpredicablity of the course of any case of eclampsia and uncertainity of its prognosis.

Many reports from home and abroad (Lean *et al* 1967, Chricton *et al* 1967; Kawathekar, 1976; Singh and Misra, 1977; Sibai *et al* 1981) have been published in the last 25 years advocating active management of labour and supporting early caesarean section in eclampsia. But every one of them does not present convincing result on maternal mortality nor mention about control of convulsion after section and foetal outcome. But some of them (Lean *et al* Singh and Misra; Sibai *et al* 1981) definitely show over all good results.

Weight of opinion against adopting a radical approach even in recent years (Editorial, B.B.J., 1976). Routine or early caesarean section is not only considered unnecessary but definitely harmful both to the mother and foetus, till the effects of convulsion are over.

Eclamptic convulsion does not necessarily depend solely on continuation of pregnancy, neither the condition is reversed immediately and completely after the expulsion of uterine contents. Whatever may be the etiology, the patholgical process that starts during pregnancy which leads to the faetures of eclampsia continues even after uterine contents are expelled for an unpredictable period of time and the condition is not necessarily ameliorated following delivery. Hence immediate delivery by caesarean section may not be the answer to the problem.

The treatment of eclompsia has to be symptomatic till the etiology is definitely established and specific treatment is evolved in future. The place of caesarean section in Indian perspective has to be defined.

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