

ECLAMPSIA – A REVIEW OF 48 CASES

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INTRODUCTION

IN SPITE OF advances made in obstetrics and gynaecological practice and in the dissemination of medical education, foetal and maternal deaths from eclampsia continues to be an important cause of perinatal and maternal mortality in Malaya (Marzuki and Thambu, 1973). In more advanced countries, namely England, eclampsia as a cause of perinatal and maternal mortality has fallen considerably. Maternal deaths in 1952–1954 were 1094 of which 110 were from eclampsia alone, while by 1970–1972 there were 355 maternal deaths with 29 due to eclampsia only (Confidential Reports, Maternal Deaths, 1952–1954; 1970–1972).

This present study reviews the experience in the management of eclampsia in a relatively modern obstetric unit.

MATERIALS AND METHODS

Over a period from March 1968 to April 1976 there were 48 cases of eclampsia seen in the Labour Ward of the University Hospital, Kuala Lumpur, Malaysia. During the same period, there were 22,848 deliveries.

The patients were either admitted through the Accident and Emergency Unit or brought directly to the Labour Ward. All cases were nursed in the eclampsia room in the Labour Ward.

Sedation was by intramuscular injections of 10 mg. diazepam (Valium), 6 to 8 ml. paraldehyde

or lytic cocktail (a combination of 50 mg. pethidine, 50 mg. chloropramazine and 50 mg. promethazine). Lytic cocktail has also an antihypertensive effect (Menon, 1956; Sheares, 1957). Convulsions were normally controlled with intravenous doses of 10 mg. diazepam (Lean *et al.*, 1968). Intravenous frusemide (Lasix) 40 mg. was given to reduce the oedema, help in reducing the blood pressure and improve the urinary output in oliguric patients. Mannitol was occasionally given to induce diuresis.

Mild hypertension usually settled with sedation alone. Severe hypertension was treated with intravenous infusions of Neprasol (1, 4 dihydrazino phthalazine) starting with 25 mg. diluted in 500 ml. of 5% dextrose. This was titrated against the blood pressure at an initial rate of 5 drops per minute and increasing by 5 drops per minute until the blood pressure was stabilised at around 120/80 to 130/90 mmHg. It was occasionally necessary to use 50 mg. Neprasol in the infusion drip.

On occasions, moribund patients were curarised with intermittent positive pressure respiration instituted after transfer to the intensive care unit.

General nursing care or expert coma nursing were instituted as required. An indwelling Foley's catheter was inserted. The intake and urinary output was charted. Observations were taken of the patient's general condition, pulse, blood pressure, respiration and temperature. The state of consciousness and the time and duration of any convulsions were noted.

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The pregnancy was assessed abdominally and vaginally after sedation. Depending on the individual case the pregnancy was either conserved or terminated. If labour started spontaneously it was allowed to proceed. Induction of labour was by oxytocin infusion stimulation or amniotomy where the cervix was favourable. Delivery was usually assisted in the second stage. Caesarean section under general anaesthesia was done where the convulsions were uncontrollable and the patient was not in labour or the cervix was not favourable for induction of labour or there was poor progress of labour or foetal distress was present.

RESULTS

Incidence

The incidence of eclampsia in the present study was one in 476 deliveries. This was less common than that of Llewellyn-Jones in 1961 when he obtained an incidence of 1 in 220 deliveries in the General Hospital, Kuala Lumpur, and commoner than that seen by Lean *et al.* (1968) in neighbouring Singapore where the incidence was 1 in 715 deliveries.

Maternal and Social Features

As expected, most were nulliparous (30 patients, 62.5%), of socio-economic classes IV and V (36 patients, 75%) and mostly unbooked (32 patients, 66.7%).

The incidence was significantly higher among the Indians (0.40%) than among the Malays (0.22%) and the Chinese (0.06%) (Table I). It has been generally thought that this was due to better social classes and booking habits seen among the Chinese, but this was not borne out in the present series. There was no difference in booking habit ($X^2 = 0.29$, $P > 0.05$) or social class ($X^2 = 7.63$, $p > 0.1$). Other undetermined factors were probably responsible.

Clinical Features

Most of the fits occurred for the first time in the University Hospital (54.2%) (Table II). How-

Table II
Clinical features of the first convulsion

	No. of patient	Per cent
PLACE OF FIRST CONVULSION		
Home	17	35.4
Journey To Hospital	1	2.1
Hospital	26	54.2
Private/Government Clinic	4	8.3
HOURS BEFORE DELIVERY		
<-1	1	2.1
1-6	10	20.8
6-12	11	22.9
12-24	5	10.4
24 and <	9	18.7
unknown	5	10.4
HOURS AFTER DELIVERY		
<-1	2	4.2
1-6	1	2.1
6-12	2	4.2
12-24	2	4.2
	48	100

ever, out of 3 maternal deaths, 2 of the patients had their first fit outside hospital. There were 27 antepartum eclamptics (56.2%); 14 intrapartum eclamptics (29.2%) and 7 postpartum eclamptics (14.6%). Two maternal deaths occurred in the antepartum eclamptics while the third maternal death was seen among the patient with intrapartum eclampsia. Most patients were in the gestational range of 36 weeks and above (21 patients, 43.7%). Thirteen patients or 27.1% were with unknown maturity. At admission, in 4 patients, no foetal heart sounds were heard. One terminated in a macerated stillbirth and three others as fresh stillbirths.

Obstetric Management

Most eclamptic patients were in labour at admission or went spontaneously into labour later (27 patients or 56.2%). Thirteen patients had induction of labour by either amniotomy or oxytocin

Table I
Racial incidence of eclampsia

	RACIAL GROUPS				TOTAL
	MALAYS	CHINESE	INDIANS	OTHERS	
Number of deliveries	6,337	9,688	6,694	129	22,848
Patients with eclampsia	14	6	27	1	48
Percent	0.22	0.06	0.40	0.78	0.21

$$X^2 = 22.435 \quad P < 0.0001$$

stimulation. Spontaneous vaginal deliveries were seen in 19 patients (39.5%). Caesarean section was done in 13 patients (27.1%). The indications for Caesarean section are seen in Table III.

Maternal Morbidity and Mortality

Nineteen patients (39.5%) did not develop any complications. Twenty patients (41.7%) had one complication, while 5 patients (10.4%) and 4 patients (8.3%) had two and three complications respectively. The causes of morbidity are listed in Table IV.

One patient with renal failure and coagulopathy had renal biopsy which showed mild interstitial nephritis. Two patients were moribund with uncontrollable fits and required curarisation with intermittent positive pressure ventilation in the Intensive Care Unit (Chan and Delikan, 1970). There were 3 maternal deaths, giving an incidence of 6.3%. A summary of their clinical features is shown in Table V. At 6 weeks postpartum, 24 patients (50.0%) were found to be normotensive, 7 patients (14.5%) were still hypertensive with 12 patients (25.0%) having defaulted. The blood pressure was not stated in 5 patients.

Foetal Mortality

In the present series, there were 15 foetal deaths giving a total foetal mortality of 30.6%. One foetus died undelivered. The corrected perinatal mortality rate (excluding those infants weighing

Table IV
Major causes of maternal morbidity

Cause	Number of cases
Anaemia (including 2 postpartum haemorrhage)	6
Pneumonia	3
Collapsed left lung	1
Disseminated intravascular coagulation	2
Wound infection	1
Puerperal pyrexia	4
Puerperal psychosis	3
Fundi haemorrhages	4
Headaches with blurred vision	2
Infection	9
Anuria (with peritoneal dialysis)	2

less than 1000 gms) was 14.6%. There were no neonatal deaths among babies weighing more than 2500 gm. All 3 neonatal deaths were due to prematurity.

Thirty-four infants in this series survived (Table VI). Eighteen of them were premature by weight (2 had associated neonatal jaundice while another 2 had urinary tract infection). One baby with a birth weight of 890 gm. survived. Of the mature infants, 2 had neonatal jaundice and 2 suffered from asphyxia but were well at follow-up.

Table III
Characteristics of labour and delivery in eclampsia

	NUMBER	PER CENT
a) TYPE OF LABOUR		
Spontaneous	24	50.0
Spontaneous † Oxytocic Stimulation	3	6.2
Amniotomy & Oxytocic Stimulation	13	27.1
Not In Labour	8	16.7
b) MODE OF DELIVERY		
Spontaneous Vaginal Delivery	19	39.5
Forceps Delivery	11	22.9
Vacuum Extraction	2	4.2
Breech Delivery	2	4.2
Caesarean Section	13	27.1
Undelivered	1	2.1
c) INDICATIONS FOR CAESAREAN SECTION		
(1) Eclampsia, not in labour	4	
(2) Uncontrollable eclampsia, 1 in labour	4	
†(3) Induction of labour with slow progress	3	
(4) Induction of labour with impending fetal death	1	
(5) Suspected rupture previous Caesarean scar; placenta increta	1	

† One patient with twin pregnancy

Table V
Clinical summary of maternal deaths

	A. bt A. R/N 051458	Y.K.L. R/N 119841	S.R. R/N 212884
RACE	Malay	Chinese	Indian
AGE (Years)	26	44	24
PARITY	1	10	3
SOCIAL CLASS	II	unknown	IV
BOOKING	unbooked seen in govt. clinic	unbooked	unbooked
GESTATION (age in weeks)	37	32	30
PAST HISTORY	Nil	hypertension	toxaemia in previous pregnancies
PLACE OF FIRST CONVULSION	hospital	home	private clinic
CONVULSION DELIVERY INTERVAL	20 mins.	52 hrs 20 mins.	died undelivered
CONVULSION DEATH INTERVAL	6 days	4 days	46½ hrs.
HIGHEST BLOOD PRESSURE	270/150	290/200	270/200
CLINICAL COURSE	hypertensive encephalopathy	hypertensive encephalopathy	oliguria microangicopathy
CAUSE OF DEATH	cardiovascular collapse	cerebral haemorrhages	cerebral haemorrhages
POSTPARTUM	Nil	Nil	Nil
FETAL OUTCOME	fresh stillbirth 2150 gms.	fresh stillbirth 1000 gms.	undelivered

Table VI
Table showing fetal outcome in relation to birth weight

BIRTH WEIGHT (gms.)	FETAL OUTCOME					TOTAL	%
	abortion	macerated stillbirth	fresh stillbirth	neonatal death	normal baby		
0 - 999	3	1†	2	1	1]	8	16.70
1000 - 2500			5†	2	17*	24	50.00
more than 2500					16*	16	33.30
Total	3	1	7	3	34	48x	100.00

† fetal heart not heard at admission
x exclude one fetus in utero, undelivered
* include one set of twins

Subsequent Pregnancies

There were 16 known subsequent pregnancies. Five patients had an uncomplicated pregnancy. Seven patients had toxæmia of pregnancy, one of which delivered a macerated stillbirth. This particular patient had one more pregnancy after that, also complicated by toxæmia but she delivered a normal live-birth. There were 2 abortions, one early and one in mid-trimester. The patient with the early abortion had a normal third pregnancy.

There was no recurrent eclampsia in these known pregnancies. The foetal salvage rate was 81.3%.

DISCUSSION

Eclampsia is still a common and dreaded cause of maternal mortality and foetal loss in Peninsular Malaysia. The aetiology of pre-eclampsia and eclampsia remains unknown, though it is believed the convulsions of eclampsia are due to cerebral anoxia from intracranial vascular spasms, haemorrhage, hypertensive encephalopathy and cerebral oedema. The main pathological alterations are seen in the liver, kidneys, brain, lungs and heart. Dennis *et al.* (1963) described changes in the renal glomeruli and arterioles. One case of renal biopsy done in this series showed mild interstitial nephritis.

The incidence of eclampsia varies in different series, and probably reflects on the geographical locality, its socio-economic development and the availability of health and antenatal services. The reduction in incidence in this series as compared to that seen by Llewellyn-Jones in 1961 is possibly influenced by the better socio-economic status and increased availability of antenatal care. Most patients with eclampsia have no antenatal care and are seen the first time with fits (Bryans, 1963). 66.7% of patients in this series were unbooked.

Chan in 1974, in a series of 504 toxæmia patients, found the incidence of toxæmia to be significantly highest among the Malays. Socio-economic differences were suggested as a possible cause. However, in this series, the incidence of eclampsia was significantly highest among the Indians, and social class was excluded as a causative factor. Other factors may be responsible for this difference.

Sixty to 80% of patients in other series have their first convulsion outside hospital (Crichton and Notelovitz, 1968), while this occurrence was seen in 54.2% in this series. This is of importance because of the availability of immediate treatment. It is significant but that two patients out of the 3

maternal deaths in this series had their first convulsion outside hospital where prompt medical aid is not available; 96.6% of 30 maternal deaths reported by Crichton and Notelovitz (1968) occurred outside hospital.

A higher maternal mortality was demonstrated by Menon (1961) in antepartum and intrapartum eclamptics as compared to postpartum eclamptics, while the rapid improvement in the maternal condition that follows delivery has been universally noted. Due to these factors, many authors have recommended a quick termination of the pregnancy (Menon, 1961; Lean *et al.*, 1968; Leading Article, 1976). Active termination of pregnancy seen in a small number of cases in this series resulted in total foetal survival. Maternal complications however appear similar.

Very often labour occurs spontaneously, as seen in 56.2% here. Delivery was usually rapid and was spontaneous in 39.5%. In recent years a freer use of Caesarean section has been advocated to reduce the maternal and perinatal mortality (Lean *et al.*, 1968; Crichton and Notelovitz, 1968), though we agree with most authors on its more judicious use (Menon, 1961; Dewhurst, 1972; Leading Article, 1976). The Caesarean section rate was 27.1% in this series with a maternal mortality of 6.25%. The three patients that died were very ill at admission.

The principal cause of maternal death is cerebral haemorrhage (Confidential Reports, Maternal Deaths, 1970-1972). Two maternal deaths in this series were possibly due to cerebral haemorrhage. The third patient died of cardiovascular collapse. Autopsies were unfortunately not done. The morbidity is also high, the complication rate in this series being 60.4%.

A high foetal loss is accepted in eclampsia due to prematurity, the toxæmic process itself and the sedatives used. The perinatal mortality rate has varied from 11.1% (Lean *et al.*, 1968) to 32.1% (Mitra *et al.*, 1958). The beneficial results of early Caesarean section in reducing perinatal mortality was shown by Lean *et al.* (1968) and Crichton and Notelovitz (1968). In this series, of the 14 foetal deaths with known birth-weights, 7 were below 100 gms. The corrected perinatal mortality rate was therefore 14.6%.

There were 16 known subsequent pregnancies of which 7 patients (43.8%) were complicated by toxæmia. The recurrence rate of hypertensive complications in recent reports average 35% (Chesley, 1971). The incidence of repeat eclampsia was

2.1% and the foetal salvage rate was 77% (Chesley, 1962). No repeat eclampsia was seen here. The majority opinion, however is that the prognosis for pregnancy following eclampsia is not too unfavourable.

SUMMARY

A review of 48 cases of eclampsia seen in the University Hospital from March 1968 to April 1976 showed that the maternal mortality was 6.3% and the foetal mortality was 30.6%. The corrected perinatal mortality was 14.6%. The prognosis in known subsequent pregnancies was also discussed.

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