

CLINICO-BIOCHEMICAL RECOVERY FOLLOWING ECLAMPSIA

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SUMMARY

Vaso-spasm leading to impaired organ functions is the pathophysiology of pre-eclampsia eclampsia syndrome. Almost all changes in various systems due to this syndrome disappear completely after termination of pregnancy without keeping behind any demonstrative residual damage.

Seventy three cases of eclampsia were visualised over three months time span through clinicians and biochemist's eyes and the regressive changes in different clinical and biochemical parameters were observed. One can say that recovery from eclamptic process in its clinical parameters occurs very fast, almost within 7-15 days. Biochemical recovery slightly lags behind the clinical. However it does occur positively, gradually and consistently within almost 30 days in majority of the patient which is statistically significant.

Introduction

In some mysterious way in certain women, presence of chorionic villi, with or without foetus, incites vasospasm and hypertension (Pritchard 1978). Eclampsia is one of the severest form of such disaster which is manifested by functional derangement of multiple organs.

Socio-economic conditions and nutritional status of nation and quality of antenatal care have remarkable bearing on incidence of eclampsia and on maternal and perinatal losses.

Spectrum of pathophysiological changes in eclampsia are the same as in pre-

eclampsia, but at intensified magnitude. Almost all pathophysiological changes regress after the expulsion of products of conception.

Hence the study is conducted to observe the trend of regression of these changes to normality after last convulsion.

Material and Methods

The present study was carried out between 1st March 1982 to 30th April 1984 in Sassoon General Hospital, Pune. The incidence of eclampsia was 1.33% of all the deliveries. Out of these cases, 80.82% were unregistered and 15.07% were admitted for severe toxemia, who later on developed convulsions. 53.42% of cases were between the age group of 20-24 years and 72.60% were primigravidae.

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Most of the cases i.e. 69.86% were intrapartum eclamptics.

In every case following investigations were carried out:

Hb: Salhi's method; P.C.V.: Wintrobe method; Urine for Albumin: sugar: for pus cells, RBC, Caste etc.; Urine for culture and sensitivity; bleeding time: Duke's method; clotting time: Lee—white method; platelet count: Direct method: Serum creatinine: Jaffe's method; serum uric acid: Caraway method; serum electrolytes: Flamephotometry; serum bilirubin: Molloy Evelyn method; SGPT: Reitman and Frenhel method; Serum alk. PO₄ tase: King armstrong method; Fundoscopic examination.

During their stay in the hospital, patients were monitored with the parameters of convulsions per day, B.P., urine output, oedema and proteinuria.

On the day of discharge all above biochemical investigations were repeated and patients were convinced for need of follow-up every fifteen days for 2½ months.

On every follow-up visit, a thorough clinical examination was carried out and a chart of B.P., oedema and proteinuria was maintained and all above biochemical investigations were repeated.

Clinico-biochemical status at admission

Pregnancy is the culprit for eclamptic convulsions and these generally stop after delivery. In the present study, whatever the mode of onset of seizures stopped completely in 75.34% of the cases within 24 hours of starting the treatment 23.29% continued to convulse upto 72 hours.

As show in Table I, 4.11% had no hypertension, 38.36% were had hypertensives and 57.54% were severe hypertensives.

Except in 17.81% of the cases, all had some form of pitting oedema, which is one of the monads of trial of toxæmia.

On CNS examination, 54.80% had hyper-reflexia and 34.25% had normal and 10.95% of the cases had sluggish patellar reflexes. Hyper-reflexia is obviously due to generalised CNS excitement.

Normally planters are flexors except in infants. 39.73% of cases had Babinski's sign positive and 42.47% had plantiflexor reflex.

At admission as shown in Table II, except for 4.11% of the cases, all had some form of proteinuria.

Considering WHO criteria of anaemia as Hb level 11 gm%, 88% of of our patients were anaemic. Average Hb value

TABLE I
BP at Admission, at Discharge and at Subsequent Visits

B.P.	At admission	Discharge	1st	2nd	3rd	4th	5th
90 mm Hg (No hypertension)	3 (4.11%)	46 (63.01%)	54 (73.97%)	59 (80.82%)	59 (80.82%)	61 (83.56%)	61
90-109 mm Hg (Mild hypertension)	28	27 (38.36%)	19 (26.03%)	14 (19.18%)	14 (19.18%)	12 (16.44%)	12
110 mm Hg (Severe hypertension)	42 (57.54%)	—	—	—	—	—	—

TABLE II
Trend of Proteinuria at Admission, at Discharge and at Subsequent Visits

Amount	At adm.	At discharge	1st	2nd	3rd	4th	5th
No proteinuria	3 (4.11%)	57 (78.08%)	70 (95.89%)	71 (97.26%)	71 (97.26%)	71 (97.26%)	71 (97.26%)
Mild (Tr-+)	21 (28.77%)	16 (21.92%)	3 (4.11%)	2 (2.74%)	2 (2.74%)	2 (2.74%)	2 (2.74%)
Mod. (+ + + + +)	29 (39.73%)	—	—	—	—	—	—
Severe + + + +	20 (27.40%)	—	—	—	—	—	—

was 9.58 ± 0.241 gm%. Haemoglobin levels went on improving at subsequent visits with Fe and vitamin therapy.

Haematocrit depends mainly on degree of anaemia and degree of haemoconcentration. In anaemia PCV decreases and due to toxemia it increases. In the present study, mean PCV was 37.54% (SE = 0.755) in spite of Hb $9.58-0.241$ gm% which confirms haemoconcentration.

Deickmann (1952) thought that haemodilution heralds the improvement in toxemia. In the present study too, drop in PCV from admission to discharge was statistically highly significant.

At admission platelet count was abnormal in 83.56% of cases, while it was normal in 49.31% of patients at discharge.

P.T. was abnormal in 20.55% of the cases while in 91.78% it became normal at discharge.

Serum creatinine in 87.67% had abnormal values, and 23.29% showed normal values at discharge. Serum uric acid was abnormal in 73.97% at admission and 34.25% showed recovery at discharge. SGPT values were abnormal in 42.21% at admission, while they were normal in 69.86% of cases at discharge.

Other investigations including serum bilirubin, BSL, BUL, BTICT were fairly within normal range.

Follow-up

As shown in Table I, 73.97% of cases had normal B.P. at 1st visit, 83.56% had normal B.P. at 4th and 5th visits. This gives incidence of 16.44% as persistent hypertension. Of these, 16.44%, 2 cases were proved to have chronic nephritis and 2 were of chronic hypertension. Thus the corrected incidence of persistent hypertension following eclampsia was 10.97%.

In Deshmukh, Anjaneyulu 1980 series, it was present in 7.1% of cases.

In almost all patients oedema disappeared before discharge and only 1 patient had slight oedema at 1st visit.

Trend of biochemical recovery

1. Proteinuria of eclampsia vanished in all cases before 1st visit, except in 2.74% of cases who were of chronic nephritis.

2. As shown in Table III 87.67% showed normal platelet count at 1st visit, and percentage of cases having normal range of platelet count went on increasing and 97.26% showed normal range at last visit.

3. Abnormal PT values are uncommon in eclampsia, if it occurs recovery to

TABLE III Percentage of Cases With Abnormal Values of Investigations at Admission, at Discharge and at Subsequent Visits

Investigations	Admission		Discharge		1st		2nd		3rd		4th		5th	
	Abn.	N.	Abn.	N.	Abn.	N.	Abn.	N.	Abn.	N.	Abn.	N.	Abn.	N.
Platelet (3-4 lakh/mm ³)	61	12	37	36	9	64	18	55	4	69	4	69	2	71
P.T.	(83.56)	58	6	(40.31)	1	(87.67)	0	(75.34)	0	(94.52)	0	(94.32)	0	(97.26)
Sr. Creatinine	64	9	56	(91.78)	52	(98.63)	46	(100)	44	(100)	33	(100)	16	(100)
Sr. Uric Acid	(87.67)	19	48	(23.29)	29	(28.77)	21	(36.99)	16	(39.73)	12	(54.79)	5	(78.08)
SPT	(73.97)	40	22	(34.25)	8	(60.27)	3	(71.23)	1	(78.08)	0	(83.56)	0	(93.15)
	(45.21)			(69.86)		(89.04)		(26.89)		(98.63)		(100)		(100)

* Biochemical recovery in all parameters except Sr. creatinine generally occurs in majority of patients within about 30 days period.

normal, occurs very fast as shown in Table III.

4. Recovery in serum creatinine values are lower as compared to other parameters. 21.92% of cases showed raised values even at last visit. Of these 2.74% had chronic nephritis and 2.74% had chronic hypertension. This raised value even at 5th visit can be explained on the fact that serum creatinine depend on multiple factors e.g. muscle mass, activity diet, convalescence and renal function.

5. Toxaemia is known to cause 25% reduction in GFR and 50% reduction in uric acid clearance. Thus hyperuricemia of eclampsia is due to dysfunction of tubules rather than primary glomerular lesions.

It is evident from Table III that only 34.25% had normal serum uric acid at discharge as compared to 93.15% at 5th visit.

6. It is clear that 100% of patients had normal SGPT values at 4th and 5th visits. It fairly indicates the fact that in almost all patients liver cell function comes to normal within 30 days. These findings deviate from that of Sinha and Ghosh (1973) who found return of SGPT/OT to normality in 10 days of last convulsion.

Trend of Clinical Recovery

1. Hypertension: Hypertension is a feature of eclampsia and most of the patients become normotensive within 10 to 15 days and majority within 30 days. 10.97% had persistent hypertension.

2. Oedema: As far as recovery of oedema is concerned it is very fast and vanished between 7-14 days.

Trend of Biochemical Recovery

4. Proteinuria: It was present in 95.89% of patients at admission 97.26% were devoid of it from 2nd visit onwards.

In two patients it persisted, who were found to have chronic nephritis. Thus proteinuria of toxæmia vanishes within 8 to 10 days.

2. PCV: Feature of haemoconcentration in toxæmia was confirmed. The drop in PCV was found to be highly significant ($P < 0.001$) from admission to discharge reflecting recovery from process of toxæmia. Thereafter PCV mainly depended mainly on haemoglobin concentration.

3. *Thrombocytopenia*: Thrombocytopenia was confirmed and improvement in platelet counts from admission to discharge was highly significant statistically ($P < 0.001$).

Number of patients with normal platelet counts went on increasing and 97.26% normal count at 5th visit, concluding that once the process of low grade DIC is removed, platelet count improves dramatically.

4. Serum creatinine: The drop in serum creatinine from admission to discharge was highly significant ($P < 0.001$) percentage of patients with normal serum creatinine went on increasing but 21.92% had still elevated values at the end of puerperium.

5. Hyperuricemia: Hyperuricemia in eclampsia was confirmed. Drop in its levels from admission to discharge was highly significant statistically ($P < 0.001$).

Recovery was smooth and 93.15% had normal serum uric acid at the end of 5th visit.

6. PT: Only 8 out of 73 patients had grossly abnormal PT. In 98.63% patients PT was normal at 1st visit, indicating that recovery in PT occurs almost within 15 days.

7. SGPT: Mean SGPT values confirmed hepatic cell dysfunction. Drop in SGPT from admission to discharge was statistically highly significant ($P < 0.001$) and all patients had normal SGPT within 45 days.

The present study concludes that recovery from eclampsia in its clinical parameters occurs very fast almost within 7 to 15 days.

Biochemical recovery slightly lags behind the clinical one, however it does occur positively, gradually and consistently within about 30 days in almost all patients without othersystemic disease.

References

1. Deshmukh, K. K. and Anjaneyulu, R.: *J. Obstet. Gynec. India.* 30: 96, 1980.
2. Dieckmann, W. J.: Cited in 'Williams Obstetrics', 16th edition, Publisher—Appleton—Century-crofts, New York, 1980, p. 676.
3. Pritchard, J.: Cited in 'Williams Obstetrics', 16th edition, Publisher—Appleten—Century-Crofts, New York, 1980, p. 664.
4. Sinha, R., Sinha, G. R. and Ghosh, S. M.: *J. Obstet. Gynec. India.* 23: 451, 1973.