

THE ROLE OF OSMOTIC DIURETICS IN THE MANAGEMENT OF ECLAMPSIA IN KARACHI WOMEN

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ABSTRACT:

In the present work, out of eighty (80) patients selected, suffering from eclampsia, thirty five (35) were subjected to the combined therapy of diazepam (7-Chloro-1,3-dihydro-1-methyl-5-phenyl-2H-1, 4-benzodiazepin-2-one) and mannitol (Osmotic diuretic) and forty five (45) patients were administered diazepam only. Consequently it was inferred that osmotic diuretic (mannitol) exhibits beneficial effects on the management of eclampsia, thereby lowering the mortality and morbidity.

INTRODUCTION

Eclampsia is one of the common complication of pregnancy, and is generally the cause of fetal and maternal mortality and morbidity (Robertson, 1971). Arterial blood pressure is usually measured by sphygmomanometer, the conditions and technique of measurement must be standardized, if consistent results are to be obtained (O'Brien & O'Mally 1979). The blood pressure normally falls at the beginning of pregnancy and reaches its lowest level in the second trimester of pregnancy when the diastolic blood pressure in the lying position is on average 15mm Hg lower and systolic blood pressure is 5mm Hg lower than the pre-pregnancy levels (Mac Gillivray *et al* 1969; Friedman and Neff. 1977b). The fall in blood pressure in the first two trimester occurs in both normotensive and hypertensive women, and women with chronic hypertension may be normotensive in early pregnancy. Both diastolic and systolic blood pressure however normally rise in the third trimester and reach pre-pregnancy levels by term in association with other cardiovascular changes such as a decrease in plasma volume and a reduction in renal blood flow (Davison *et al.*, 1980). The absolute level of blood pressure gives as much information in terms of prognosis and management as it rises during pregnancy. It also overcomes the difficulties with regard to blood pressure measurements made in early pregnancy which may be falsely low and leads to an

apparent false rise in blood pressure (Mac Gillivray, 1961). Edema, including generalized edema, is a normal occurrence in pregnancy and in the absence of hypertension is associated with an above average fetal outcome (Thomson *et al.*, 1967). The occurrence of edema with hypertension and proteinuria is associated with an increased perinatal and maternal mortality (Friedman & Neff, 1977a). Methyldopa is primarily a central alpha receptor stimulant which causes peripheral vasodilatation by reducing sympathetic nervous system (Ounsted 1988). The most important aspect of management of imminent eclampsia is an anticonvulsant therapy, every unit should have an agreed protocol, so that when cases of severe hypertension and proteinuria or of eclampsia do present effective treatment is given promptly with proper control (Hibbard and Rosen 1977). Anticonvulsant therapy plays an important part in the management of severe hypertension in pregnancy, particularly in association with imminent eclampsia. The choice of anticonvulsant agent and the indications for its use still remain controversial (Sihai, 1988). Diazepam (valium) is given as an intravenous bolus of 1.0mg, or 10mg respectively, over 2-5 minutes, followed by a continuous infusion of diazepam 25mg in 500ml of 5% dextrose water at a rate not exceeding 2.5mg diazepam per minute, until the patient is drowsy up to a total dose of 10-30mg diazepam (Hibbard and Rosen, 1977). The perinatal death rate in eclampsia depends upon whether the eclampsia occurs antenatally, in labour or postnatally, and it varies from 213/1000 (Tempelto and Campbell, 1979) and 50/1000 birth (Pritchard *et al.*, 1984). In eclampsia the blood flow and oxygen consumption may be reduced by 20% due to cerebral vasospasm (Mc Call, 1953). Cerebrovascular hemorrhage is the commonest cause of maternal death in eclampsia. Cerebral hemorrhages and softening were present in 60 % of eclamptic patients who died within two days of the onset of convulsions (Sheehan and Lynch, 1973). C.T scans confirm presence of the marked cerebral edema in a high proportion of eclamptic patients with persisting coma after eclamptic seizures (Richards *et al.*, 1986).

MATERIALS AND METHOD

Patients:

Eighty (80) patients were randomly selected from Obstetrics and Gynecology department of Abbasi Shaheed Hospital, K.M.C., Karachi. The criteria of inclusion was age group ranging from 19 to 35 years, elevated blood pressure, 30 to 37 weeks of gestation and altered level of consciousness with history of fits. All patients were permanent residents of Karachi.

Materials:

- 1- Infusion Mannitol BP 20% (Osmofundin).
- 2- Infusion Dextrose water 5%.
- 3- Injection Diazepam (Valium).
- 4- Disposable syringes and infusion sets.
- 5- Sphygmomanometer and stethoscope.

Method:

Eighty patients so selected, were divided into two groups (A & B), Injection diazepam and Infusion dextrose water 5% were given parenterally to both groups, while Infusion mannitol was only administered to the second group. Hypertension was monitored with sphygmomanometer and recorded.

RESULTS AND DISCUSSION

The eighty eclamptic subjects were randomly selected, ranging from age groups 19 to 35 years, had elevated blood pressure, altered state of consciousness, and history of fits or seizures, having 30 to 37 weeks of gestation. Forty-five eclamptic subjects out of eighty were managed routinely, i.e., were given anticonvulsant therapy, with loading dose of diazepam 10-20 mg intravenously stat administered, then 25mg in 500ml dextrose water 5% in infusion was given slowly. The rate of infusion was titrated against the response of the subjects. In remaining 35 eclamptic subjects the combined therapy of infusion mannitol and injection diazepam was administered. The infusion mannitol was given intravenously slowly 500ml per day along with routine diazepam therapy. In all 80 eclamptic subjects pregnancy was terminated within 48 hours of hospitalization, by induction of labour or cesarean section. The result of above study revealed that in group A out of 45 eclamptic subjects on injection diazepam therapy, 37 subjects the level of consciousness improved within 48 hours, in 5 eclamptic subjects the level of consciousness improved within 72 hours, and 3 eclamptic subjects expired, 2 expired due to brain hemorrhage (pontine hemorrhage) and one subject due to pulmonary embolism [Table 1]. In group B out of 35 eclamptic subjects were on the combined therapy of anticonvulsant (valium) and osmotic diuretic (mannitol) 34 subjects showed improved level of consciousness within 48 hours and one subject expired due to pulmonary embolism [Table 2].

TABLE 1
EFFECT OF INJECTION DIAZEPAM ON 45 ECLAMPTIC SUBJECTS

NO OF SUBJECTS	DRUG ADMINISTERED	RESULT	REMARKS
37	Injection Diazepam	Recovered in 48 hours	82.23%
05	Injection Diazepam	Recovered in 72 hours	11.11%
03	Injection Diazepam	Expired	6.66%

PI Diagram of Table 1

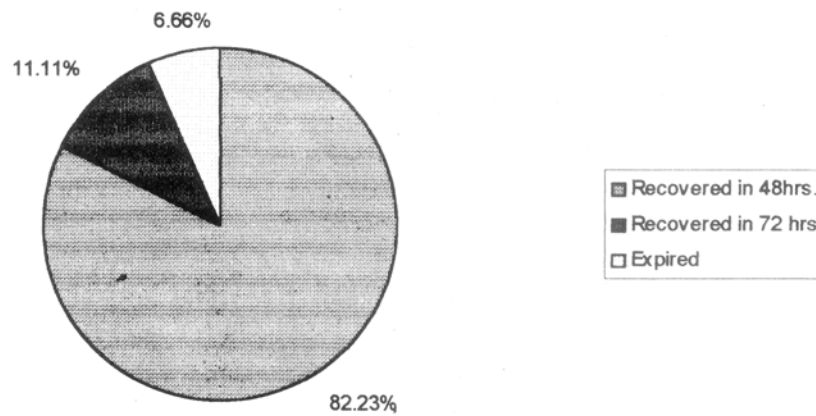
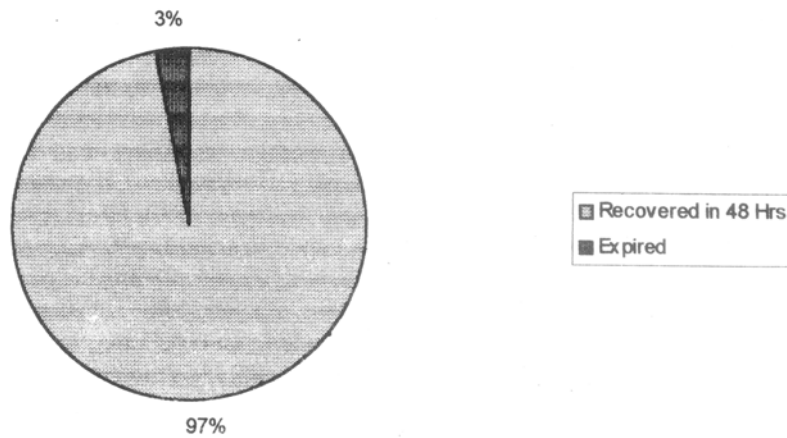


TABLE 2
EFFECT OF COMBINED THERAPY ON 35 ECLAMPTIC SUBJECTS

NO OF SUBJECTS	DRUG ADMINISTERED	RESULT	REMARKS
34	Injection Diazepam +Infusion Mannitol	Recovered in 48 hours	97%
01	Injection Diazepam +Infusion Mannitol	Expired	03%

PI Chart of Table 2



CONCLUSION

It is therefore concluded that osmotic diuretic (mannitol BP 20%) therapy has beneficial effects in reducing peripheral body edema and edema of the brain, thus lowering the maternal and fetal mortality and morbidity due to eclampsia.

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