NIFEDIPINE IN HYPERTENSIVE EMERGENCIES IN PREGNANCY

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SUMMARY

**Nifedipine was given sublinguelly (10 mg) for sustained severe hypertension < 160/110 mm of Hg in 950 women with eclampsia and/or severe pregnancy induced hypertension. Nifedipine was found to be highly efficacious as antihypertensive agent. The fall in BP with use of nifedipine was maximum at 20 min i.e., Mean 28.26 Systolic
———————. The fall in blood pressure was maintained till 4 29.06 Diastolic
hours after administration of the drug. Only 10.86% women required 2 capsules of 10 mg given at 30 minutes interval for control of acute hypertension. No serious side effects were observed with nifedipine and short term use of nifedipine does not appear to compromise neonatal outcome.**

Introduction

Active management of severe hypertension associated with severe prgnancy induced hypertension (SPIH) and eclampsia is important in order to minimise maternal mortality and morbidity. Only recently, need of treating severe hypertension in eclampsia/SPIH, formerly largely neglected area, is appreciated. It assumes greater significance in countries where eclampsia and SPIH are common. Mode of administration and rapidity of its action form the basis for the selection of adjuvant antihypertensive during such hypertensive emergencies. Parenteral reserpine is routinely used for this purpose in most hospitals in India. However, the use of reserpine has become somewhat obsolete due to its erratic efficacy and side effects. Parenteral diazoxide and Nitroprusside had never been popular for use in pregnancy. Parenteral hydrallazine (Apresoline), widely used in West is still not approved for marketing in India.

Walters and Redman (1984) successfully used oral nifedipine in 21 patients for acute severe hypertension in pregnancy or in puerperium. However, no further reports are recorded in literature. The present study was undertaken to determine the efficacy of sublingual nifedipine for hypertensive emergencies in pregnancy. A pilot study in 20 women with eclampsia and/or SPIH, revealed that sublingual nifedipine by 10 mg perforated capsule was an effective method of lowering blood pressure (BP)

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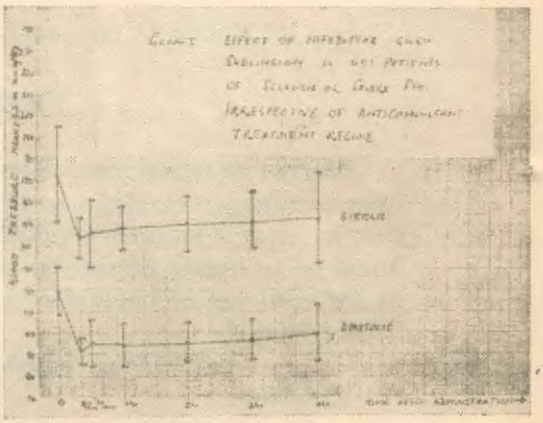
rapidly, without any significant systemic side effects.

Material and Methods

Two hundred and sixty nine eclampsia and 681 SPIH patients admitted with sustained diastolic BP 110 mm Hg or higher or a systolic BP of 160 mm of Hg or higher to Eclampsia room of Lady Hardinge Medical College and Hospital during 3 years period (January 1984 to December 1986) comprised the study group. These patients were given lytic cocktail therapy or intravenous diazepam or parenteral magnesium sulfate as first line anticonvulsant therapy. Initially, the patients were given 10 mg perforated gelatin capsule of nifedipine sublingually. A second dose was administered 30 minutes later if diastolic B.P. failed to drop to 100 mm of Hg. The effect was recorded over a period of 4-6 hours. Changes in systolic or diastolic pressures of greater than 20 mm from pretreatment values, in pulse rate of greater than 30/minutes, in respiration of greater than 5/mt or in temperature of greater than 1°C were considered significant. Patients were watched closely for exaggerated fall in BP, rebound hypertension, fetal distress and possible other side effects attributable to the drug like dizziness, giddiness, flushing, headache, nausea, palpitation and nasal stuffiness. The neonates were attended by neonatology resident and transferred routinely to newborn nursery for specialised early neonatal care and close observation.



As a majority of such patients were unsupervised, only 22 women were receiving antihypertensive agents like methyldopa and Napresol. The drug was not given in patients receiving betablockers. No distinction was made between SPIH and eclampsia; and antenatal and postnatal hypertension either. Only patients with odd serial hospital number were analyzed for effect of nifedipine on systolic and diastolic blood pressure.

Results

During the period of review, there were 1376 cases of eclampsia and SPIH,

TABLE I

Profile of Severe PIH/or Eclampsia Cases

	Treated with Nifedipine N-950	Not treated with Nifedipine N-426
Received Antenatal care	13%	18%
Average Age (year)	23.1	23.4
Average parity	1.7	1.7
Gestational age (weeks)	26-39	29-40.3

out of a total 32097 deliveries. Clinical profile of these patients is shown in Table I.

The mean zero hour B.P. in study group (N-451) was $\frac{172.43 \pm 19.80}{120.26 \pm 12.82}$ (mean ± SD) mm Hg. Graph I shows the decline in B.P. with the use of nifedipine. The mean reduction in BP at 20 minutes was $\frac{28.26}{29.06}$ and was found to be maximum, both in systolic and diastolic B.P. as compared to fall at 30 minutes, 1 hr, 2 hr, 3 hr and 4 hr respectively. The fall in both systolic and diastolic BP was highly significant statistically ($P < .001$) upto period of 4 hours and not so at 6 hrs. Patients with systolic BP of 200 mm Hg or higher (N-82) responded to one dose of nifedipine with BP drop of 38.12 mm of Hg systolic and 30.91 mm of Hg diastolic in 20 minutes.

Forty nine patients responded to two doses, of nifedipine with a mean drop of 32.06 mm of systolic and 30.41 mm Hg diastolic BP in 60 minutes. Twenty-two patients receiving other antihypertensive therapy responded similar to patients not on any previous therapy.

No significant changes were observed in pulse rate, temperature and respiratory rate after administration of nifedipine. Taste of Nifedipine was well tolerated in most of the patients. Side effects (Table II) could be appreciated well only in magnesium sulfate treated patients as they were alert. In lytic cocktail and diazepam treated patients, side effects were not clinically obvious as the patients were heavily sedated and could not volunteer any information.

Comparison of neonates of nifedipine treated and untreated mothers shows that incidence and spectrum of neonatal morbidity seen in two groups was similar, and no specific correlation was found with use of nifedipine.

TABLE II

Side Effects of Nifedipine in Magnesium Sulfate Treated Patients (N-122)

Side effects	Number
Headache	38
Palpitation	18
Flushing	14
Dizziness	14
Nausea	2
Transient hypotension (70 mm of Hg)	1
Prolonged profound Hypotension	—
Rebound hypertension	—
Nasal stuffiness	—

Discussion

During recent years, nifedipine, a potent vasodilator belonging to new class of therapeutic agents, the calcium channel blockers, has been reported to be useful in hypertensive crisis in non gravid patients since 1973, but only handful of such reports are recorded in literature. Not much work has been done using nifedipine in hypertensive emergencies in pregnancy. To the best of our knowledge, the first and the only study of the use of nifedipine to control acute hypertension in pregnancy was published by Walters and Redman (1984). In their study, a rapid and significant fall in B.P. by an average of 26/20 mm of Hg was seen at 20 minutes after oral administration and was found to be maximum at 30 minutes i.e. 31/24. The fall in systolic blood pressure was maintained till 4 hours, while the fall in diastolic B.P. disappeared by 2 hours. Our observations on diastolic B.P. are at variance from those of Walters and Redman (1984), but similar to those of Jacob *et al* (1984)

who found that duration of response lasted 3½-4 hours in non gravid patients. Like Walters and Redman (1984), we noticed no difference in the response of antenatal and postnatal patients. Likewise, patient receiving antihypertensive therapy were no more sensitive nor resistant to treatment with nifedipine.

Our data further suggest that no serious side effects were observed with nifedipine; mild to moderate headache and palpitation could not be specifically correlated with use of nifedipine alone, as former could be a manifestation of severe PIH/or eclampsia and later could result from magnesium sulfate therapy as well. Most of the other side effects like insignificant rise in pulse rate and occurrence of flushing are expected consequence of the vasodilatation effect of nifedipine by which it exerts antihypertensive action (Huysmans *et al* 1983).

There was no instance of profound hypotension. Transient hypotension was noted in one patient 50 minutes after administration of 2 capsules of 10 mg given at 30 minutes interval. Since occasional patient may develop transient hypotension with nifedipine, careful observation and monitoring of B.P. is recommended specially in patients requiring more than 10 mg for control of B.P.

Huysmans *et al* (1983) emphasised an advantage of a calcium antogonist in comparision to other vasodilators that it selectively increases cerebral and cardiac blood flow, as has been shown in animal and human experiments. Our data furthen suggest that a short term use of nifedipine does not appear to compromise neonatal outcome. The occurrence of neonatal morbidity relates mainly to the effect of preexisting severe PIH/or eclampsia for which patient had been treated.

Therefore, Nifedipine appears to be safe and effective antihypertensive agent for short term use in acute obstetric hypertension because of ease of administration, rapid onset and long duration of action.

References

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