PERINATAL OUTCOME IN SEVERE PIH: A PROSPECTIVE STUDY OF RISK FACTORS

By

S. JAIN, S. KUMARI, U. SEHGAL, K. BATRA, S. NAGAR AND K. KANODIA

SUMMARY

Perinatal outcome of 651 infants born to mothers with severe PIH was determined prospectively in this study. The overall PNMR was 173.5/1000. PNMR increased almost 3 fold in presence of proteinuria and more than 2 fold if systolic B.P. was above 200 mm of Hg. Other major risk factors increasing PNMR significantly were lack of antenatal care, Haemoglobin <8.5 mg%, gestation less than 35 weeks, birth weight less than 2 kg, IUGR, accidental haemorrhage and twin pregnancy.

Introduction

In India perinatal mortality rate (PNMR) in severe pregnancy induced hypertension (PIH) has been accepted to be high, as the emphasis is still on maternal salvage and there is lack of tertiary care neonatal centers capable of dealing very premature and low birth weight infants. This apparent lack of interest in fetus of severe PIH cases may not be justified because 15-30% of PIH patients which we see in Indian teaching Institutions are of severe variety. We could trace very few published Indian studies (Das *et al*, 1968; Ghosh *et al*, 1972; Jain and Dhall, 1982) which cited only in part to potential perinatal and neonatal risks to fetus in severe PIH. The present prospective study was undertaken to determine extent of perinatal problems in severe PIH in level II care teaching hospital and evaluate prognostic significance of various epidemiological factors, individual clinical signs and complications of PIH on perinatal outcome.

Dept. of Obstetrics and Gynaecology and Neonatology, Lady Hardinge Medical College and Associated Hospitals, New Delhi.

Accepted for publication on 25-2-87.

Material and Methods

This is a prospective study of 642 consecutive cases of severe PIH (according to the criteria laid by American Committee of Maternal Welfare) after 24 weeks of pregnancy, with no known history of essential hypertension or renal disease, admitted for delivery at Lady Hardinge Medical College & S.K. Hospital during 2 years (1983-84). Nine cases who developed eclampsia in the hospital are excluded from analysis. Dependent oedema and weight gain was disregarded because neither are there any clear cut objective parameters, nor is there any evidence of their occurrence increasing the perinatal risk. Low-birth weight (LBW) was defined as birth wt. < 2.5 kg,

preterm as one where delivery occurred before 37th week of gestation, and IUGR as birth weight below one standard deviation of mean weight of gestation according to growth chart of Ghosh *et al* for Delhi (1971). Monitoring of fetal well being was done clinically as well as by daily fetal movement count, non stress test and ultrasound whenever conservative management was possible. Indications for early delivery were uncontrolled severe hypertension, increasing proteinuria, renal insufficiency, Grade III or IV fundus changes, underlying medical problems such as diabetes, abnormal antepartum fetal heart rate testing or Grade III placental maturity, intrauterine growth retardation and HELLP syndrome. Lytic cocktail and calmpose therapy were used, with or without sublingual Nifedipine, to stabilize patients before delivery. Labour was induced or augmented by ARM and oxytocin infusion, if it did not occur spontaneously. During labour, they had close clinical monitoring for FHR, meconium staining of amniotic fluid (MSAF) and duration of labour. Apgar score at 1 and 5 mt were recorded and clinical maturity of neonates assessed by Pediatric resident. The neonates were followed in postnatal wards and in neonatal nursery till discharge or death in hospital.

Results

The incidences of severe PIH and PNMR result is shown in Table I and are compared with the data previously published from the first author from PGIMER, Chandigarh (1974-78). Table II shows the relationship of PNMR in different groups according to diastolic B.P. and proteinuria. PNMR was atleast three-fold higher in women with proteinuric severe PIH than in women without proteinuria. Likewise, with increase in systolic BP above 200 mm of Hg, there was more than two-fold chance of having perinatal loss as compared to that in mothers with less than 200 mm of Hg. Table III shows the incidence of preterm birth, LBW & IUGER, mean gestational age at delivery and birth weight. Risk of preterm delivery in severe PIH is real one as it occurred in 1/3rd cases (Spontaneously or artificially) and there was almost 1:2 chance of having growth retarded fetus in severe PIH.

Table IV summarises the major risk factors for perinatal loss. Relative risk of

TABLE I

Summarises Incidence and PNMR in Severe PIH in Two Teaching Institutions

	LHMC New Delhi (83-84)	PGIMER* Chandigarh (1974-78)
No. of patients	633	177
% of all deliveries	3.18	1.74
% of all PIH cases	29.57	14.72
Total births	651	203
Perinatal deaths	113	35
Stillbirth	62	28
Neonatal death	51	7
PNMR/1000 (Crude)	173.5	172.4
NNMR/1000	86.5	40.00

* Jain & Dhall (1982).

TABLE II
Association of Hypertension and Proteinuria on Perinatal Loss

mm of Hg	% PIH cases	Perinatal loss (%)
Diastolic		
> 110 without proteinuria	6.91	6.66
> 110 with proteinuria	93.1	18.15
Systolic		
> 200	4.42	39.28
< 200, >160	95.58	16.37

TABLE III
Profile of Births in Severe PIH

	Severe PIH I	Mild PIH II	General non PIH obstetric population III
Total births	651	722	600
1. IUGR (%)	43.62	29.63	17.6
2. Preterm births (%)	33.64	8.03	11.6
3. Low birth weight (<2.5 kg) %	56.22	38.50	37.33
4. Mean birth wt. (kg)	2.22 ± 0.74	2.61 ± 0.49	2.72 ± 0.44
5. Mean gestation at delivery (weeks)	35.56 ± 3.30	38.5 ± 2.07	40.11 ± 1.89
1,2,3,4,5 I Vs II or III P <0.001			

TABLE IV
Differences in PNMR According to Risk Factors

Risk factor	Status		% of perinatal loss		P. value
1. Antenatal care	Nil/ poor	V/s Fair/satisfactory	21.64	9.29	P <.001
2. Parity	Nulli-parous	V/s Multiparous	14.4	21.37	N.S.
3. Haemoglobin (gm%)	<8.5	V/s 8.5+	39.5	13.17	P <0.01
4. Gestational Age (wks.)	<35	V/s 35+	61.26	8.33	P <.001
5. Birth wt. (kg)	< 2	V/s 2+	45.1	6.45	P <0.01
6. IUGR	IUGR (—1 SD or below)	V/s AGA	28.52	8.71	P <0.01
7. Accidental haemorrhage	Acciden-tal Hge	V/s Non-accidental Hge	57.50	13.73	P <.01
8. Twins	Twins	V/s Singleton	36.11	19.41	P <0.05

perinatal loss was calculated to determine the importance of various factors associated with severe PIH. All the denominators except parity showed statistically very significant impact on perinatal loss.

Of 27 patients who began severe PIH

before 28 weeks gestation, 20 delivered by 28 weeks and 7 delivered by 32 weeks and all ended with perinatal death.

Table V shows increasing fetal survival according to increasing birth weight and gestation at delivery. Primary cause of 113 perinatal deaths is summarised in Table VI.

term, LBW and growth retarded infant, as compared to mild PIH, as well as non-PIH general obstetric patients (Table III).

Ghosh *et al* (1972) on reviewing trends in PNMR on 27380 births reported PNMR of 308/1000 in 198 severe PET cases.

TABLE V
Fetal Survival According to Birth Weight and Gestational Age

Birth wt. (kg)	Fetal survival (%)	Gestational Age (wks.)	Fetal survival (%)
< 1	Nil	< 28	Nil
1+ — 1.5	16.22	28+ — 32	21.87
1.5+ — 2.0	78.05	32+ — 35	61.02
2.0+ — 2.5	88.34	35+ — 37	87.97
> 2.5	96.85	> 37	92.60

TABLE VI
Primary Causes of Perinatal Death

Causes	% of total deaths
Stillbirths	54.86
(a) Extrinsic perinatal hypoxia	20.35
(b) Accidental haemorrhage	25.66
(c) Cong. anomalies	4.42
(d) Diabetes mellitus	1.76
(e) Obstructed labour	1.76
(f) Others	0.88
Neonatal deaths	46.13
(a) Asphyxia	6.19
(b) Prematurity/severe IUGR	25.66
(c) Septicemia	5.30
(d) Meconium aspiration syndrome	1.76
(e) Pulmonary haemorrhage	3.53
(f) Major Cong. anomalies	2.65

Discussion

It has long been thought that fetus of mother with severe PIH is at disadvantage. It is re-emphasized in this report that in patients of severe PIH, there is significantly higher rate of having pre-

On comparing the data from two leading Institutions of Northern India where first author has worked, it is striking to note that PNMR in severe PIH (83-84) at LHMC, New Delhi, a level II care teaching hospital, is almost identical to PGIMER (1974-78) which has a tertiary care neonatal center (Jain and Dhall, 1982). However period of studies have been different.

PNMR was atleast 3 fold higher in proteinuric severe PIH cases than in women without proteinuria (181.5 vs 66.6/1000). Similar trend was noted by Das *et al* (1968) in their small series of 150 toxaemia cases. Likewise, systolic BP above 200 mm of Hg was found to be good prognostic marker for assessing perinatal outcome in this study.

Onset of very early severe PIH (< 28 weeks) was associated with very poor fetal prognosis. Other major high risk factors asociated with significantly higher PNMR were lack of antenatal care ($P < 0.001$). Haemoglobin < 8.5 gm% ($P < 0.01$), gestation less than 35 com-

pleted weeks at delivery ($P < 0.01$) birth weight of less than 2 kg ($P < 0.01$), presence of IUGR ($P < 0.01$), accidental haemorrhage ($P < 0.01$) and multiple pregnancy ($P < 0.05$). Parous women with severe PIH were more likely to have growth retarded infant and showed demonstrably higher PNMR, although the differences in PNMR did not achieve statistical significance.

Majority of the perinatal deaths were the result of unfavourable intrauterine environment or prematurity or sequelae of both. Thus the presence of severe PIH poses a significant threat to fetus, while evaluation of mother is possible by standard parameters, antenatal evaluation of fetus is somewhat more difficult.

References

1. Das, S. K., Rosario, Y. P. P. and Heera, P.: J. Obstet. Gynec. India, 18: 63, 1968.
2. Ghosh, S., Bhargava, S. K., Madhover, S., Taskar, A. A., Bhargava, and Nigam, Pediatrics, 47: 826, 1977.
3. Ghosh, S., Bhargava, S. K., Saxena, H. M. K. and Sagreiya, K.: Final report of ICMR study. A study of perinatal mortality with reference to maternal, fetal and neonatal factors from clinical biochemical, bacteriological and pathological point of view (1969-72).
4. Jain, S. and Dhall, K.: Indian Pediatrics, 19: 299, 1982.