Low Dose Aspirin Prophylaxis For Prevention Of Pregnancy Induced Hypertension In High Risk Cases

K.A.Yelikar, Nausheen M.Farrukh
Department of Obst & Gyn, Government Medical College, Aurangabad

Summary: A prospective randomised, case controlled study was carried out to assess the role of low dose aspirin prophylaxis for prevention of pregnancy induced hypertension. The results showed that there was a significant decrease in the incidence of P.I.H and it's complications in the aspirin treated group, as compared to controls that is (23.52% vs 80.64%).Also P.I.H in the control group was more severe, as compared to the study group. Development of proteinuria was found in 41.93% patients of control group, as compared to 5.82% patients in the study group. The birth weight of the babies was also more in the aspirin group as compared to control group.No adverse effects whatsoever, maternal or foetal could be found, which could be attributed to aspirin.

Introduction

Pregnancy induced hypertension, is one of the single largest cause for the toll of maternal and foetal lives, is known to occur in upto 10 to 15% of primigravidas and up to 5% of multigravidas, is responsible for 20% of perinatal deaths & 2-3% mothers seccumbing.Current studies implicate utero-placental ischaemia, secondary to the defective invasion of musculoelastic media of spiral arteries by the trophoblasts and the resulting imbalance between thromboxane and prostacyclin as being basic to the patho-physiology of P.I.H. An improved understanding of these and other factors controlling the patho physiology of this common condition has lead to interest in the prevention of this diseases by prophylaxis aimed at the ecosanoid interactions at the level of maternal platelets and the surface epithelium

Aspirin in low doses, acts as an irreversible inhibitor of the enzyme cyclooxygenase, preventing the synthesis of TXA, by platelets (due to their enucleated state), whereas the synthesis of PGI, by vascular endothelium remains unaffected (as new enzyme can be synthesized by nucleated endothelial cells).

Material And Methods

Definition Pregnancy induced hypertension was defined as systolic blood pressure more than 140 mmHg or diastolic blood pressure more than 90 mmHg on two occasions, 24 hours apart, in previously normotensive women

Severe Pregnancy Induced Hypertension was defined as

- Diastolic blood pressure more than 110 mmHg
- Persistent proteinuria 2 (+) or more
- Oliguria
- Convulsions

The subjects comprising of high risk cases were selected on the basis of their nulliparity, family history, history of P.I.H in previous pregnancies and multiple gestations. All the selected patients were normotensive and roll over test positive.

Roll over test was done in 446 women, and was positive in only 89 patients. Only the R.O.T. positive women were selected for the study.

Forty four women were randomly allocated to aspirin group (study group) and 45 women to control group.

Complete follow up could be obtained for 34 women in study group and 31 in control group.

The study group were given 50 mgm, aspirin starting from 26-28 weeks of gestation till 7 days before the expected date of delivery.

Each patient was examined at fortnightly interval. Fundal height, blood pressure, urine proteins and weight were recorded at each visit. Those who developed P.I.H. were admitted. Their KFT, LFT, platelet count ,fundus examination were done and they were managed according

to the severity of the disease. The efficacy of low dose aspirin as a preventive measure against P.I.H. was assessed by analysing the results statistically.

Observations

The study and control groups were well matched with respect to age , parity, past history of P.I.H. in multipara and family history. There was a significant difference in the number of patients in the study group and the control group who developed P.I.H.(Table I)

Table 1

Development of Pregnancy Induced Hypertension in Study And Control Group

Group	No PIH	PIH	Total
Study (n=34)	26(76.47%) (b)	8(23.52%) (a)	34(e)
Control (n=31)	6(19.35%) (d)	25(80.64%) (c)	31(f)
Total	32 (h)	33 (g)	65 (k)

[P=<. 001 Significant]

Table II

Showing Results of Follow Up of Cases

Group	Did not develop PIH	Uncomplicated P.I.H.	Complicated P.I.H.			
			Proteinuria	Eclampasia	Retinopathy	Abruptio
Study	26 (76.47%)	6 (17.64%)	2 (5.82%)	None	1	None
Control	6 (19.35%)	12 (38.70%)	13 (41.93%)	None	None	None

Most of the patients in the aspirin group who developed P.I.H. inspite of prophylaxis, had a mild (uncomplicated) P.I.H. as compared to patients in the control group, many of whom had complicated P.I.H.(Table II).

Also, more patients in the control group had to be hospitalised and put on antihypertensive treatment as compared to the study (Aspirin) group, as shown in Table III.

Table IV depicts the birth weight of infants in the study and control group. There was a significant difference (p=0.005) in the number of babies in the study group as compared to those in the control groups who had a birth weight more than 2500 gm Table V)

Table III

Development Of PIH & Severe PIH (Requiring Antihypertensive Therapy

Group	Mild PIH diastolic <100 mmHg	Severe PIH required anti-hypertensive treatment diastolic >100mmHg	Total
Study	8(100%)	None (0%)	8
Control	10(40%)	15(60%)	25

Table No.IV

Birth Weight Of Neonates

Group	1500-2000gms	2001-2500gms	2501--3000gms	>3kgs
Study	1 (2.9%)	5 (14.7%)	26 (76.47%)	2 (5.8%)
Control	3 (9.6%)	12 (38.7)	16 (51.60%)	None

{p= <.005 is significant}

Table V

Birth Weight Below & More Than 2500gms

Group	<2500gms	>2500gms
Study	6	28
Control	16	15

Table VI

Development OF P.I.H.

Series	Study	Control
Schiff et al (1989)	2.9%	22.6%
CLASP Study (1994)	4.6%	6.3%
Harinder Kaur et al (1994)	45.0%	77.5%
Present study (1997)	23.52%	80.64%

Discussion

High risk cases for development of P.I.H. could satisfactorily be selected on the basis of history and roll over test.

In this study 80.6% of the patients in the control group

developed P.I.H. (statistically significant).These results are comparable with those of Harinder Kaur et al(1994) who used the same selection criteria for the study i.e. ROT and reported 45% P.I.H. in the study group as compared to 77% in the control group.

The development of severe P.I.H. was also less in the aspirin group (None) as compared to 60.00% in the control group. These results are comparable with the results of Vinita Das (1994) and Harinder Kaur et al (1994).

The birth weight of neonates was more in the aspirin group as compared to that in the control group.82.35% of the babies in the aspirin group were more than 2500 grams at birth as compared only 51.6% in the control group. These results are comparable with those of Harinder kaur et al(1994) and Bharadwaj (1995).No bleeding tendencies were observed in either the babies or the mothers in the aspirin group.

Thus, low dose aspirin appears to be safe and beneficial drug for both mother and her foetus specially in cases which are at high risk for developing pregnancy induced hypertension.

Conclusions

- The development of P.I.H in the aspirin group was definitely low (23%) as compared to control group (80%) proving the efficacy of aspirin.
- In the patients who developed P.I.H. inspite of receiving aspirin, the severity profile and complications were much less as compared to the control group.
- Birth weight of babies in aspirin group was significantly higher than that in control group.

References

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