Original Article

Effect of low dose aspirin therapy during period of placentation on maternal and neonatal outcome

Vinit Ramesh Dhadke[1], Sanjay B Bansode[2*], Shailesh P Vaidya[3]

[1]Sr. Resident, ESIC Hospital Andheri East, Mumbai-400093, Maharashtra, INDIA.
[2]Associate Professor, [3]Professor and HOD, Department of Obstetrics and gynecology, SRTR Government Medical College, Ambajogai, Maharashtra, INDIA.
Email: dr.sanjaybansodeobgy@gmail.com

Abstract

Background: Pre-eclampsia is a multisystem disorder usually associated with raised blood pressure and proteinuria. A relatively common complication of the second half of pregnancy, it affects 2-8% of pregnancies. The role of low-dose aspirin in the prevention of pre-eclampsia has gained attention in recent time. **Aims and objectives:** To study the effect of low dose aspirin therapy on maternal and neonatal outcome used during period of placentation for prevention of preeclampsia. **Materials and Methods:** Total 200 pregnant women with 8 to 14 weeks of gestation visiting the institute for antenatal care were selected for the study and were divided in to two groups containing 100 subjects each. Asprin group: 100 patients with aspirin between 8 to 14 weeks when maximum trophoblastic invadary activity is present. Control group: 100 patients without aspirin between 8 to 14 weeks when maximum trophoblastic invadary activity is present. The detail clinical evaluation of all the selected pregnant women was conducted. The collected information was recorded on a prestructured proforma. Regular follow up all the pregnant women was maintained till the termination of pregnancy. The maternal and fetal outcome of pregnancy was recorded. **Results:** Majority of the women in the present study were in the age group of 20-25 urs followed by 25-30 yrs of age and majority of the women were multi gravid. In aspirin group 3% females developed Pre-eclampsia, 1% females developed severe Pre-eclampsia, no female developed eclampsia. In control group 14% pt. developed Pre-eclampsia, 3% developed severe Pre-eclampsia, 1 patient developed eclampsia. In Aspirin group 69% deliveries occurred spontaneously whereas in control group 59% deliveries occurred spontaneously. In asprin group 90% pregnancies delivered at term in control group 77% pregnancies delivered at term. In aspirin group 1 patient had Abruption where as in Control group 4 patient had Abruption and placenta praevia in 3 patients. In Aspirin group 6 babies were Low Birth Weight and 4 were Very Low Birth Weight. In control group 20 were Low Birth Weight and 5 were Very Low Birth Weight. The incidence of neonatal mortality was 4% in Aspirin group, 8% in Control group. The maternal morbidity on the present study was zero. **Conclusion:** Thus we conclude that by the use of low dose aspirin during period of placentation decreases the incidence of pre-eclampsia. There was a definite decrease in the incidence of caesarean section. Significant decrease was found in the incidence of still births. Incidence of low birth weight was reduced and incidence of perinatal mortality was reduced subsequently, with use of low dose aspirin during period of placentation.

Key Words: low dose aspirin, maternal and neonatal outcome, preeclampsia.

[*]**Address for Correspondence:**
Dr. Sanjay B. Bansode, Associate Professor, Department of Obstetrics and Gynecology, SRTR Government Medical College, Ambajogai, Maharashtra, INDIA.
Email: dr.sanjaybansodeobgy@gmail.com
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Pre-eclampsia is a multisystem disorder usually associated with raised blood pressure and proteinuria. A relatively common complication of the second half of pregnancy, it affects 2-8% of pregnancies.[1] Although outcome is often good, pre-eclampsia remains a major cause of morbidity and mortality for both woman and child. Although the causes of pre-eclampsia are unknown, it is primarily a placental disorder.[2] During implantation, deficient trophoblast invasion of the maternal spiral arteries leads to under perfusion of the uteroplacental

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circulation and placental ischaemia. The resulting placental damage is thought to be responsible for the release of, as yet unknown, factors into the maternal circulation, which then alter endothelial cell function and cause wide spread circulatory changes.[2] Preeclampsia is associated with a relative deficiency of intravascular production of prostacyclin (a vasodilator) and excessive production of thromboxane A2, Synthesized by aggregated platelets. Low dose Aspirin would tilt the balance in favor of Prostacyclin and thus has pharmacological support for its use.[3] The role of low-dose aspirin in the prevention of pre-eclampsia has gained attention in recent time. Cause of pre eclampsia is now hypothecated with defect in placentation. So use of low dose aspirin during placentation period is being tried in this study for the possible prevention of pre - eclampsia, during late pregnancy period.[4]

MATERIALS AND METHODS

The present randomized control trial was conducted in the department of obstetrics and gynaecology of S.R.T.R. Govt. Medical College, Ambajogai, Maharashtra. Following inclusion and exclusion criteria was used for the selection of study subjects.

Inclusion Criteria

- All the pregnant women with 8 to 14 weeks of gestation visiting the institute for antenatal care.

Exclusion Criteria

- Patient with bleeding disorders.
- Patients with chronic hypertension.
- Patients with emesis gravidarum.
- Previous history of pre- eclampsia.

Thus by using above mentioned inclusion and exclusion criteria total 200 women were selected in the study and were divided in to two groups conataioning 100 subjects each.

- Asprin group: 100 patients with aspirin between 8 to 14 weeks when maximum trophoblastic invadary activity is present.
- Control group: 100 patients without aspirin between 8 to 14 weeks when maximum trophoblastic invadary activity is present.

The detail clinical evaluation of all the selected pregnant women was conducted. The collected information was recorded on a prestructured proforma. Regular follow up all the pregnant women was maintained till the termination of pregnancy. The maternal and fetal outcome of pregnancy was recorded.

RESULTS

Table 1: Table showing age distribution of patients included in the trial

		Aspirin Group	Control group	Total
Age Group	15 – 20yrs	9	9	18
	20 – 25yrs	51	44	95
	25 – 30yrs	37	44	81
	30 and more	3	3	6
Gravidity	Primigravida	30	29	59
	2ndGravida	33	35	68
	3rdGravida	34	33	67
	4thGravida	2	1	3
	5thGravida	1	2	3
	Total	100	100	200

It was seen majority of the women in the present study were in the age group of 20-25 urs followed by 25-30 yrs of age. The age distribution difference observed in the asprin and control group was not statistically significant. (X^2=1.121, df=3, p=0.7721). It was seen that majority of the women in the present study were multi gravid.

Table 2: Distribution according to severity of occurrence of preeclampsia

Sr. No.	Severity of preeclampsia	Aspirin Group	Control group	Total
1	Normotensive	96	82	178
2	Mild Pre eclampsia	3	14	17
3	Severe Pre eclampsia	1	3	4
4	Eclampsia	0	1	1
	Total	**100**	**100**	**200**

While studying the incidence of Pre-eclampsia it was observed that in aspirin group 3% females developed Pre-eclampsia, 1% females developed severe Pre-eclampsia, no female developed eclampsia. In control group 14% pt. developed Pre-eclampsia, 3% developed severe Pre-eclampsia, 1 patient developed eclampsia. (X^2=10.218, df=3, p=0.016).

Table 3: Distribution according to mode of delivery and timing of delivery

		Aspirin Group	Control group	Total
Type of Delivery	Spontaneous	69	59	128
	Induced	14	20	34
	Instrumental Delivery	5	5	10
	Cesarean section	12	16	28
Duration of pregnancy	Pre-term	10	15	25
	Term	90	77	167
	Prolonged	0	8	8
	Total	**100**	**100**	**200**

In Aspirin group 69% deliveries occurred spontaneously whereas in control group 59% deliveries occurred spontaneously. The incidence of instrumental and cesarean delivery was 5% and 12% respectively and in Control group it was 5% and 16% respectively. It was

observed that in asprin group 90% pregnancies delivered at term whereas 10% pregnancies delivery occurred pre term. In control group 77% pregananices delivered at term whereas 15% delivered preterm and in 8% delivery was post term. The difference observed in timing of delivery in asprin and control group was statistically significant. (X^2=10.01, df=2, p=0.0066).

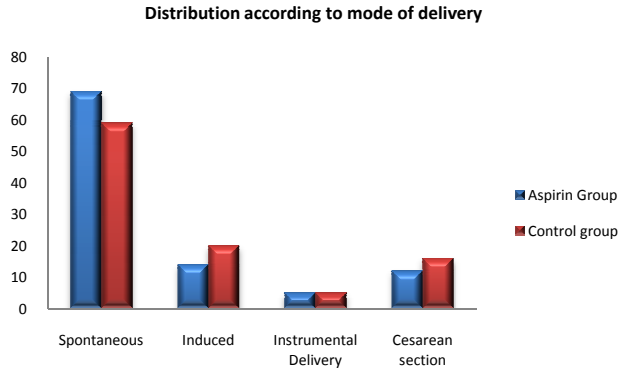

Figure 1:

Table 4: Distribution according to occurrence of APH, birth weight and bleeding tendencies in neonates

		Aspirin Group	Control group	Total
APH	No APH	99	90	189
	Abruption	1	4	5
	Placenta Praevia	0	3	3
	Others	0	3	3
Birth Weight	Normal	90	75	165
	Low Birth Weight	6	20	26
	Very Low Birth Weight	4	5	9
Bleeding Tendencies	Nil	98	85	183
	Purpura	0	5	5
	Petechiae	1	6	7
	Cephalhematoma	1	4	5
	Total	**100**	**100**	**200**

In aspirin group 1 patient had Abruption where as in Control group 4 patient had Abruption and placenta praevia in 3 patients. On application of chi square test the incidence of APH among the control is found to be statistically significant as compared to cases. (X2=8.229, df=3, p=0.0415). In Aspirin group 6 babies were Low Birth Weight and 4 were Very Low Birth Weight. In control group 20 were Low Birth Weight and 5 were Very Low Birth Weight. The difference among birth weight was found to be statistically significant among the cases and controls (X^2=9.013, df=2, p=0.011). It was seen that in asprin group, cephalhematoma and petechiae was observed observed in one neonate each. In control group 5 neonates developed purpura, 6 developed petechiae and 4 babies developed Cephalhematoma. The difference observed in development of bleeding tendencies in asprin and control group was statistically significant. (X^2=11.29, df=3, p=0.0102)

Table 5: Distribution according to maternal neonatal mortality

Sr. No.	Neonatal outcome	Aspirin Group	Control group	Total
1	Maternal Mortality	0	0	00
2	Neonatal Mortality	2	8	10

The incidence of neonatal mortality was 4% in Aspirin group, 8% in Control group. The maternal morbidity on the present study was zero.

DISCUSSION

The presents study was conducted in the department of obstetrics and gynaecology with the aim to study the effect of low dose aspirin therapy during period of placentation on maternal and neonatal outcome. Over the duration of two years the present study was conducted among 200 pregnant female which were divided randomly in to Asprin and control group. The most common age group in our study was between 20-25 years of age followed by 25-30yrs of age. More than 35 years age group comprised 6% of the cases. Similar findings have been noted in the Ecppa Trial[5]. It was seen that majority of the women in the present study were multi gravid. The findings were comparable with the findings observed by Cunningham and Levino[6]. The incidence of mild pre-eclampsia in aspirin group was 3% and severe Pre-eclampsia was 1%, no female developed eclampsia. In control group 14% patients developed Pre-eclampsia, 3% developed severe Pre-eclampsia and 1% patient developed eclampsia. Thus the incidence of pre eclampsia was reduced in asprin group as compared to control group (X^2=10.218, df=3, p=0.016). Bujolde Roberts *et al*[7] in their study observed that with low dose aspirin, around 89% cases remained normotensive, 9.3% and 0.7% patients developed mild pre eclampsia and severe pre eclampsia, no patient developed eclampsia. Thus the findings were comparable with the present study. It was observed that in Aspirin group 69% deliveries occurred spontaneously whereas in control group 59% deliveries occurred spontaneously. The incidence of instrumental and caesarean delivery was 5% and 12% respectively and in Control group it was 5% and 16% respectively. In the present study there was decrease in rates of caesarean section by 12% in aspirin group. Similar findings were also reported by Imperiale and Petrulis[8] in their study. In asprin group 10% pregnancies delivery occurred pre term whereas in control group 15% delivered preterm and in 8% delivery was post term. The difference observed in timing of delivery in asprin and control group was statistically significant. (X^2=10.01, df=2, p=0.0066). Thus

in the present study with use of low dose aspirin there was decrease in incidence of pre-term labour by 8 percent and about 90 percent patients delivered at term. According to Knight M, Duley L *et al*,[5] decrease in the incidence of pre-term labour was 8% and 92% of the patients delivered at term. According to Coomaraswamy *et al*[9] there was a 14% decrease in the incidence of pre-term labour with use of Asprin and about 86 percent patients delivered at term. In our present study risk of abruption was reduced by 60%. According to a trial conducted by Papageorghiou, Parra M and Palma Dias R[10] reduction in the risk of abruption was 4%. In contradictory to our findings Askie *et al*[11] observed no significant difference in decreasing the incidence of antepartum haemorrhage.

The proportion of low birth weight was reduced in Asprin group (6%) as comoared to control group (20%). The difference among birth weight was found to be statistically significant among the cases and controls (X^2=9.013, df=2, p=0.011). Thus there was reduction in the incidence of low birth weight and very low birth weight by 15%. According to Blasp Trial *et al*[12] there was significant reduction in incidence of low birth weight by 14.8%. According to Imperiale TF and Petrulis AF,[8] there was significant reduction in low birth weight by 44%. Cephalhematoma and petechiae was observed in one neonate each in asprin group. However in control group 5 neonates developed purpura, 6 developed petechiae and 4 babies developed Cephalhematoma. The difference in development of bleeding tendencies was statistically significant in control group. (X^2=11.29, df=3, p=0.0102). The maternal morbidity on the present study was zero. In the present study the rate of neonatal mortality decreased by 6%. According to Leslie GI and Gallery ED[13] there was significant decrease in decreasing the rate of neonatal mortality by 6.9 %. In contrary Imperiale TF and Petrulis AF[8] observed no significant decrease in the rates of neonatal morbidity and neonatal mortality in their study.

CONCLUSION

Thus we conclude that by the use of low dose aspirin during period of placentation decreases the incidence of pre-eclampsia. There was a definite decrease in the incidence of caesarean section. Significant decrease was found in the incidence of still births. Incidence of low birth weight was reduced and incidence of perinatal mortality was reduced subsequently, with use of low dose aspirin during period of placentation.

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