ORIGINAL ARTICLE

CORELATION OF ADVERSE PERINATAL OUT COMES AND PLACENTAL INFARCTS IN HYPERTENSIVE PRETERM PREGNANCIES

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Background: The placenta can provides valuable information about the damaging effects of hypertension on pregnancy and foetal outcome. This study was conducted to study the frequency of placental infarcts in hypertensive preterm pregnancies and its effects on foetal outcomes. **Methods:** This cross-sectional study was conducted at Department of Obstetrics and Gynaecology, Khyber Teaching Hospital, Peshawar and Department of Anatomy, Khyber Medical College, Peshawar from January 2008 to March 2009. The sample size consisted of hundred placentae divided into two groups. Group A consisting of 50 normal full term placentae (delivered between 37–42 weeks of gestation). Group-B consisting of 50 premature placentae from hypertensive mothers (35–37 weeks of gestation). The data was collected on a pre-designed Performa and analysis was done by SPSS-17. **Results:** In the placentae of premature group the incidence of placental infarcts were increased. Foetal outcome was poor in the presence of placental infarcts. **Conclusion:** Adverse perinatal outcomes including growth restriction and still birth is higher in hypertensive premature deliveries with placental infarcts than in normal full term deliveries.

Keywords: Insufficiency, placentae, hypertensive disorders, mortality, placental infarcts, pre-maturity, pregnancy induced hypertension

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INTRODUCTION

The diary of intrauterine life is the placenta. It focuses on the development that is going on during the pregnancy.[1] Obstetricians n anatomists have developed gross interest in the placental studies as the placenta is important for the nutrition of the foetus n pregnancy continuity.[2] The most global epidemic is hypertension that complicates pregnancy leading to much maternal and foetal mortality. Pregnancies complicated by hypertension leads to placental insufficiency.[3] Due to maternal vasospasm the maternal arterio-placental blood flow is decreased in preeclampsia.[4] Morphological changes occur in the placenta due to maternal hypertension causing decreased oxygen in the intervillous space. This is caused by reduced blood flow to the uterine muscle and placenta.[5] There is decreased invasion by the trophoblast of the uterine spiral arteries resulting in elastic and muscular persistence in the tunica media of the arteries resulting in abnormal development of placenta. There is higher resistance low flow chorio-decidual circulation.[6]

This low circulation leads to both gross morphological and histological changes in the placenta causing ischemia which leads to reduced oxygen supply to the foetus leading to IUGR contributing to delivery before 37 weeks and foetal death.[7] A thorough examination of the placenta is vital as it gives valuable information about the foetal well-being.[8]

This study was conducted to study the frequency of placental infarcts in hypertensive preterm pregnancies and its effects on foetal outcomes. This study can be of help to the obstetricians to clinically relate the placental change in PIH and will also help to become aware of the health status of the country.

MATERIAL AND METHODS

This cross sectional study was done on hundred cases, with 50 cases in each group of premature and full term pregnancy each, that were taken from obstetrics and Gynaecology units, Khyber Teaching Hospital, Peshawar. Group A consisted of 50 placentae from hypertensive disorder of pregnancy delivered prematurely and Group B consisted of 50 placentae from uncomplicated full term deliveries.

The placentae were collected from labour room and operation theatre along with the placental cords and membranes. The placentae along with the cords and membranes were observed for any lesions that were pathological. The placentae were cleaned with tap water in order to remove blood clots. The umbilical cord was sectioned 5 cm from the site of insertion and the membranes trimmed. The placentae were tagged for identification. Gross morphometry like diameter, thickness, weight were done. Pathological lesions like infarction were recorded. The mode of delivery and outcome of foetus (IUGR, Still birth and neo-natal death) were noted.

RESULTS

In the present study gross examination of the two groups was done. The study group (Group A) i.e. placentae of premature deliveries had more gross pathological features when compared to the full term pregnancy placenta (Group-B) (Table-1).

The outcome of foetus in group A and group B were observed (Table-2). The incidence of still birth and neo-natal death was more in the group-A but it was statistically not significant. In the group-B the association of still birth with infarction was statistically significant, whereas no relation was noted in the low apgar and neo-natal death in the presence of infarction natal death in the presence of Infarction.

In the group A the incidence of low apgar was more $p<0.05$, this was statistically insignificant.

Table-1: Infarction

Infarction	Group A	Group B	*p*-value
Absent	28	45	<0.001
Present	22	5	

Table-2: Correlation of Infarction with foetal outcome

	Group A					Group B				
	N	**Low APGAR**		**Still birth**	**Neonatal death**	**No**	**Low APGAR**	**Still birth**		**Neonatal death**
Infarction										
Present	22	5	11	6	4	5	0	3	2	0
Absent	28	5	18	5	2	45	7	37	1	4
p		>0.05		>0.05	>0.05		>0.05	<0.001		>0.05

DISCUSSION

Mother and foetus are the two important ends of reproduction; the placenta brings these two ends together. The placenta provides valuable information about the damaging effects of hypertension on pregnancy and foetal outcome. Not only the hypertensive problems but other maternal pathologies like anaemia have been studied which effect placenta and can ultimately have consequences on the well-being of the neonate.[9]

In our previous study we found that hypertensive disorders of the pregnancy adversely influence the morphology of placenta, which leads to the premature delivery.[10] Hence we designed this study to assess the microscopic changes in the placenta in patients with hypertensive disorders and to correlate the outcome of babies with microscopically effected placentas and found that significantly higher number of placenta from patients with hypertensive disorders had infarcts and the babies born to these patients had poor outcome. The placental infarction is due the thrombotic occlution of the pregnancies complicated by hypertension.[11] An increase in the incidence of placental infarction is seen in the hypertensive disorders of pregnancy in the premature group. Bandana Das *et al*[12] 1996 also found an increase in the incidence of infarction in the hypertensive group. They found in their study that the infarction was 50% in the mild hypertension, 70% in severe preeclampsia cases and 70 in eclampsia cases, 50% of essential HTN cases and 57.14% of super imposed eclamptic cases.

In this study the association of still birth with infarction is highly significant.

The main result of the hypertension in pregnancy is decreased nutrition caused by utero-placental vascular insufficiency which causes growth restriction.[8]

CONCLUSION

This study showed that the incidence of placental infarction was more in the premature hypertensive group. It had adverse effects on foetal outcomes. The adverse foetal outcomes in pregnancy can be dealt by regular monitoring and follow-up, widespread care in the antenatal period and proper health facilities along with health education especially to low socio-economic and rural groups. This study can help the practitioners to improve the foeto-maternal outcome by correlating the changes in the placenta with foetal and maternal outcomes in hypertensive pregnancies.

AUTHOR'S CONTRIBUTION

EA, FS: conceived the study, data collection, analysis, literature review and literature search, NS: data collection, literature search and manuscript writing

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