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Reduced Maternal Cotyledons in Placenta of PIH

(Original Research Article)

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ABSTRACT

Background: *The placenta reflect the status of maternal hypertension as it is mirror of maternal and fetal health.*

Aim: *The aim of this original research article is to present status of maternal cotyledons in placenta of Pregnancy induced hypertensive women compare to Normotensive women.*

Method: *This study was done in Rama Medical College Kanpur. Placentas from forty cases of PIH and forty cases of normotensive women delivered collected and studied.*

Result: *Macroscopic study revealed that compare to normotensive women's placenta, PIH women's have lower number of maternal cotyledons.*

Conclusion: - *Hypertension during the pregnancy lead to reduced number of maternal cotyledons.*

Key Words: - *PIH, Preeclampsia, Eclampsia, Placenta, Pregnancy, Hypertension, Maternal Cotyledon.*

Introduction

Placenta is the most accurate record of the infants' prenatal experience as stated by Benirschke [1]. Placenta is a vital organ for foetal development, derived from both foetal and maternal tissues, the maternal portion being the decidua basalis and the foetal portion is chorion frondosum [2]. It is basically meant for exchange of nutrients between maternal and foetal circulation to ensure an optimal environment for foetal growth and development [3,4]. Foetal membranes chorion and amnion cover the placenta [2].

Pregnancy Induced hypertension is that hypertension that develop as a direct result of gravid state. It includes Gestational hypertension, pre-eclampsia and eclampsia. Where rise in systolic pressure is 30 mm Hg or diastolic pressure is 15 mm Hg over the previously know pressure [5].

Common pathologies of pregnancy like intrauterine growth retardation, preeclampsia (pregnancy induced hypertension), are associated with incomplete vascular remodelling in the placenta [6]. It is a medical problem, when pregnancy is complicated by hypertension which affect maternal health, architecture and functions of the placenta may even jeopardise the foetal normalcy.

Hypertension, complicating 7% to 15% of all pregnancies, is a leading cause of maternal and foetal morbidity, particularly when elevated blood pressure (BP) is due to preeclampsia, either alone (pure) or "superimposed" on chronic vascular disease [7, 8].

Aim and Objective

The aim of study to understand the decidua baselis of placenta in pregnancy induced hypertensive women who have delivered the baby and to compare its finding with normotensive women.

Material and Method

This study was done in Department of Anatomy, Rama Medical College, Kanpur. Eighty placentas collected from the labour room of Rama Hospital, Rama Medical College, Kanpur. Forty placentas of this were from the women diagnosed for PIH and remaining forty from normotensive women.

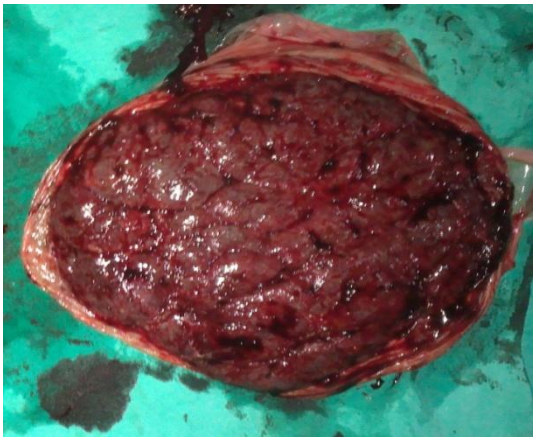
Inclusion Criteria

- Gestational hypertension Without proteinuria or pathological oedema
- Pre-eclampsia-Hypertensio and proteinuria with or without pathological oedema.
- Eclampsia – Pre-eclampsia complicated with convulsions and / or coma.
- Pre-eclampsia or eclampsia superimposed on chronic hypertension

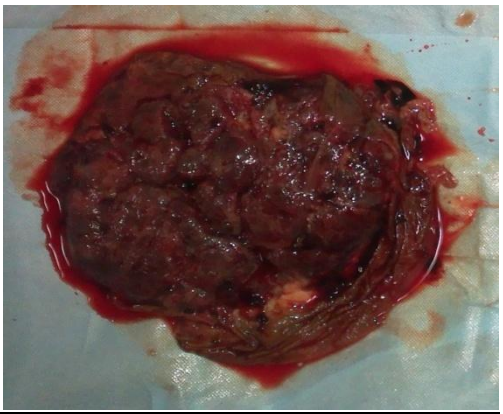
Exclusion Criteria

- Chronic hypertension
- Essential hypertension
- Chronic renal disease (reno vascular)
- Coarctation of aorta
- Pheochromocytoma
- Thyrotoxicosis
- Connective tissue disease-systemic lupus erythematous
- Pre-existing Diabetes mellitus(IDDM-Type 1)
- Pre-existing Diabetes mellitus(NIDDM-Type 2)
- Gestational Diabetes Mellitus (GDM)
- Twins Pregnancy

The placenta collected from the labour room of Rama Hospital, Rama Medical College Kanpur, soon after the delivery, the placenta washed in running tap water till it loose the blood to its maximum then Photography of decidua baselis surface done to its closest view and the decidua baselis surface of placenta was examined by naked eye for number of maternal cotyledons then this placenta fixed with 10% formalin.



Maternal Cotyledon Observed in Labour Room
Placenta of Uncomplicated, Normotensive Women



Maternal Cotyledon Observed in Labour Room
Placenta of Preeclampsia Women

This fixed placenta carried to Department of Anatomy, Rama Medical College for final observation by paper pin method.

Counting of Cotyledons by Paper Pin Method

As per paper pin method, the cotyledon observed is marked by the paper pin. So each cotyledon has one paper pin and at the end the total number of pins inserted were counted which corresponds to the total number of cotyledons.

Result

Groups	Average number of cotyledons
Normotensive women	23
Pre- eclampsia	19
Eclampsia	17

Maximum 31 cotyledons, minimum 18 cotyledons and mean 23 cotyledons in Normotensive women.
Maximum 22 cotyledons, minimum 17 cotyledons and mean cotyledons 19 in Preeclamptic women
Maximum 20 cotyledons, minimum 14 cotyledons and mean 17 cotyledons in Eclamptic women

Discussion

In this study we found that the cotyledon number reduces from normotensive to eclampsia. Mean cotyledons in normotensive's placenta is 23, which reduce to 19 in preeclampsia and further reduced to 17 in eclampsia. The hypertensive pregnancy leads to less number of cotyledons. Placental insufficiency is the cause of neonatal morbidity [9], which in turn might be the result of these observed alterations in placental weight.

Gundalli S.M et al said the average number of cotyledons observed 18.38 in control and 15 in preeclampsia and 14 in eclampsia [10]. Patil G.V. and Kumar S. also support this study; they said frequency of distribution of cotyledon reduces from Normal to PIH [11].

Conclusion

- Hypertension changes the morphology of placenta.
- Hypertension lowers the cotyledon numbers.
- Cotyledon number reduces from normotensive to PIH.
- Lesser cotyledons present in placenta of eclamptic than preeclamptic.

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