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Study of Morphology of Placenta in Pregnancy Induced Hypertensive Mothers

KEYWORDS: Placenta, PIH pregnancies, morphometry

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ABSTRACT *Placenta is one of the most challenging organs, any insult to placenta during the developmental stage affects the morphometry of placenta which in turn affects the growth of fetus in-utero. Hypertensive disorders complicating pregnancies are common, now a days, responsible for 5-8% of all maternal deaths. In the present study, 80 placentae, 40 from normotensive pregnancies (control group) and 40 from pregnancies induce hypertension (study group) were studied. The parameters studied were mean placental weight, volume, diameter, average thickness, no. of cotyledons, presence of infarction, calcification and site of attachment of umblical cord, no. of blood vessels in cord were noted. Study revealed that, there is significant reduction in placental weight, volume, diameter, thickness of placenta in study group and also increase in number of colyledons, but statically insignificant.*

Introduction :
Placenta is one of the most challenging organs; its functions often hold the key to fetal development. It is a villous haemochorial organ that not only helps in nutrtive transfer and fetus but also acts as a metabolic and endocrine organ both in maintainasnce and development of fetus. Hypertensive disorders complicating pregnancies are commonest cause of maternal and foetal morbidity and mortality. Hypertension in pregnancy is associated with poor blood supply to the intervillous spaces of placenta which in turn leads to placental abruption. A thorough study of placenta may record certain alternation which could be co-related with fetal and maternal conditions and which could be of value in terms of predicting fetal outcome.

Materials and methods
The study was conducted in the department of antomy, NSCB medical college, Jabalpur. The placentae were collected from labour room and from gynaecological operation theatre, Jabalpur. A total of 80 placentae were studied, out of which 40 cases were associated with pregnancy induced hypentension (study group) and 40 cases were associated with noomotensive pregnancies (control group). The serial numbers of placenta and mother were same. On admission into the labour room a detailed history in respect of name, age, address, husbands name, occupation, menstrual history, gravidity and parity were noted from clinical records. Mothers were examined for height, weight, built, B.P. along with recording of their investigations. USG report recorded from the clinical records. Placentae with 10 cm long stump of umblical cord and membrances collected soon after the normal vaginal or caesarian section. Any abnormality of cord and membrance was noted adherent blood colts were removed from maternal surface, placentae were washed in running tap water. An accurate weight, volume (by water displacemtn method), diameter, average thickness, shape, number of cotylelons, presence of infarction, clacification, site of attachment of umblical cord, no. of blood vesseb in U.C. were noted.

Result
Table – shows that the mean placental weight in control group is 425$\pm$ 69.921 gm while in study group is 336.0 $\pm$ 47.88 gm, the difference is significant (P<0.05)

The mean placental volume is control and study group is 352.50 $\pm$ 58.88 & 236.5 $\pm$ 71.95 ml respectively and this difference is also significant (as P<0.05).

Similarly the mean diameter is control and study group is 17.050 $\pm$ 1.81 cm and 15.61 $\pm$ 1.50 cm respectively with significant (P<0.05) difference.

The mean thickness is control and study group is 2.16 $\pm$ 0.29 & 1.90 $\pm$ 0.28 cm respectively and this difference is also significant (as P<0.05).

In our study the mean of number of cotyledon in control group is 16 $\pm$ 2.35 and in study group 14.70 $\pm$ 3.36, the difference is not statistically significant (P>0.05).

In the present study, irregular shaped placenta is found more in PIH mother i.e. 8% than normal study group i.e. 1%.

Calcification is found more in PIH group (Study).

Discussion
In the present study the mean placental weight is 425gm ± 69.921gm in normal group and PIH group the placental weight is 336gm ±47.88gm . It is clear that the mean placental weight is significantly reduced in pregnancy induced hypertensive group as compaired to control group. Similar findings were noted by Damania et a1, Mohan H. et al2, Malik Mirchandani3, Prabjot et al4, Das et al5 Udaini and Jain6, Rath et al7, Majumadar et al8.

In our study the placental volume is 352.5 ± 58.88 1ml in control group and 236.5 ±71.95 in study group. The placental weight is significantly reduced in hypertensive group in comparison with control group. Similar findings were noted by Kishwara, Ara, Rayhan, Begum (2009)9.

The placental diameter is 17.05 ±1.81cm in control group and 15.61 ±1.50cm in study group. The placental thickness is 2.16 ±0.29 cm in control group and 1.9±0.28cm in study group. This findings are significantly reduced in pregnancy induced hypertensive group in comparison with normal group. Similar findings were observed by Kishwara, Ara, Rayhan, Begum (2009) and Barkar et al10.

In our study no. of cotyledons 16 ±2.35 in normal group

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and 14.7±3.36 in PIH group. The no. of cotyledons reduced in PIH group but this finding is statistically insignificant (p>0.05)

Conclusion:

Placenta being a fetal organ shares the same stress and stain , to which the fetus is exposed. Any disease process like PIH affecting the mother also has a great impact on placenta and fetus. From the study it is concluded that the PIH adversely affects placental outcome. If the disease is diagnosed at an early stage by frequent monitoring of blood pressure, blood and mean test, and clinical examinations, added precaution can be instituted during antenatal period and labour to reduce for the risk to mother and fetus.

Table
morphometry of placenta

Parameter	Normal			PIH			Significant
	Mean	Std. Deviation	N	Mean	Std. Deviation	N	
Weight Pl	425.00	69.921	40	336.00	47.889	40	5.12 p<0.05
Vol. Pl	352.50	58.881	40	236.50	71.959	40	6.67 p<0.05
Mean diameter	17.050	1.8174	40	15.610	1.5092	40	3.08 p<0.05
Thickness	2.160	0.2989	40	1.900	0.2821		2.71 p<0.05
Cotyledons	16.00	2.357	40	14.70	3.368	40	1.74 p>0.05

if t≥1.96; p<0.05 significant
t<1.96;p>0.05 not significant

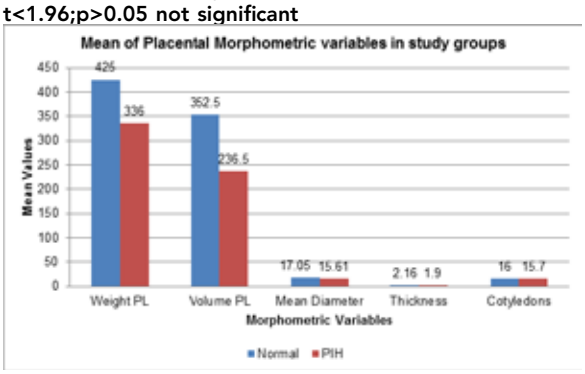

Fig. 1-Fetal surface of placenta

Fig. 2 : Marginal insertion of umbilical cord

Fig. 3 : Maternal surface showing calcification

Fig. 4 : Maternal showing infarction

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