



Study of Morphology of Placenta in Anaemic Subjects

Dr. Nisha Gajbhiye

Assistant Professor, Department of Anatomy, NSCB Medical College Jabalpur (MP)

Dr. K. K. Gour

Assistant Professor, Department of Anatomy, NSCB Medical College Jabalpur (MP)

Dr. S. K. Shrivastava

Professor & Head, Department of Anatomy, NSCB Medical College Jabalpur (MP)

ABSTRACT

Introduction - 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. The study was conducted in department of anatomy and department of Obstetrics & Gynaecology, NSCB medical college & hospital, Jabalpur. Objective – The study was carried out to study the morphology of placenta in anaemic subjects. Material and method - In the present study, 100 placentae, 20 from normal pregnancies (control group) and 80 from anaemic mothers (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 umbilical cord & no. of blood vessels in cord. Result -Study revealed that, there is significant increase in placental weight, volume, diameter & thickness of placenta in study group and also reduction in number of cotyledons. Conclusion - From the study it is concluded that anaemia affects placental outcome.

KEYWORDS

Placenta, anaemia, morphometry.

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 nutritive transfer in fetus but also acts as a metabolic and endocrine organ both in maintenance and development of fetus. Anaemia in pregnancy is common, result into fetal hypoxemia and also stimulates placental growth. According to WHO, a level of haemoglobin below 11 gm/dl during pregnancy is an indicator of anaemia [WHO 2008]. Placental hypertrophy associated with maternal anaemia, which is probably a compensatory physiological response to ensure adequate oxygen supply to the fetus¹. A thorough study of placenta may record certain alteration which could be correlated with maternal conditions like anaemia and which could be of value and in terms of predicting fetal outcome.

Materials and methods :

The study was conducted in the department of anatomy and department of Obstetrics & Gynaecology, NSCB medical college & Hospital, Jabalpur. The placentae were collected from labour room and from gynaecological operation theatre. A total of 100 placentae were studied, out of which 80 cases from anaemic (study group) and 20 cases from normal 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 umbilical cord and membranes collected soon after the normal vaginal delivery or caesarian section. Any abnormality of cord and membrane was noted, adherent blood clots were removed from maternal surface, placentae were washed in running tap water. An accurate weight, volume (by water displacement method), diameter, average thickness, shape, number of cotyledons, presence of infarction, calcification, site of attachment of umbilical cord, no. of blood vessels

in umbilical cord were noted.

Result :

Table – shows that the mean placental weight in control group is 425 ± 69.921 gms while in study group is 474.63 ± 70.194 gms, the difference is significant ($P < 0.05$). The mean placental volume in control and study groups is 352.50 ± 58.88 & 393.23 ± 63.674 ml respectively and this difference is also significant (as $P < 0.05$). Similarly the mean diameter in control and study groups is 17.050 ± 1.81 cms and 18.306 ± 2.03 cms respectively with significant ($P < 0.05$) difference. The mean thickness in control and study groups is 2.16 ± 0.29 & 2.411 ± 0.571 cms 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 ± 2.35 and in study group 13.24 ± 3.10 , the difference is statistically significant ($P < 0.05$). In the present study shape of placenta found to be discoidal in 55% cases among normal placenta and oval in 63.3% cases of anaemic group. Placenta with accessory lobe is found in anaemic group. In our study sub chorionic haematoma is found in anaemic case.

Blood vessels of umbilical cord in all placentae showed presence of 3 blood vessels i.e. 2 arteries and 1 vein except one placenta of anaemic group had one artery and one vein in umbilical cord.

Discussion :

In the present study the mean placental weight is $425\text{gm} \pm 69.921$ gms in normal group and anaemic group the placental weight is 474.63 ± 95.194 gms. It is clear that the mean placental weight is significantly increased in anaemic group as compared to control group. Similar findings were noted by Beischer et al², Akin agboola³, Mongia, Yadav, Jain⁴ also observed similar findings in anaemic group. Barker et al (1990)⁵, Godfrey et al (1991)⁶, and Lao and Wong⁷ observed the same findings. Dhall (1990)⁸ observed that the weight and volume was reduced in anaemic group but the difference was statistically insignificant.

In our study the placental volume is 352.5 ± 58.881 ml in control group and 393.23 ± 63.674 ml in study group. The placental weight is significantly increased in anaemic group as compared to control group. Similar findings were noted by Begum, Nurunnabi⁹. This findings was in accordance with those of Mongia, Yadav, Jain.

The placental diameter is 17.05 ± 1.81 cms in control group and 18.306 ± 2.03 cms in study group. Thagaleeta et al¹⁰ also observed the significant difference in diameter among different group.

The placental thickness is 2.16 ± 0.29 cms in control group and 2.41 ± 0.57 cms in study group. This finding is significantly increased in anaemic group as compared to control group. Lao and Wong (1997) also found the placental thickness higher in anaemic group.

Conclusion:

Placenta being a fetal organ shares the same stress and stain, to which the fetus is exposed. Any disease process like anaemia affecting the mother also has a great impact on placenta and fetus. From the study it is concluded that the anaemia adversely affects placental outcome. If the disease is diagnosed at an early stage by frequent monitoring and clinical exami-

nations, added precaution can be instituted during antenatal period to reduce for the risk to mother and fetus.

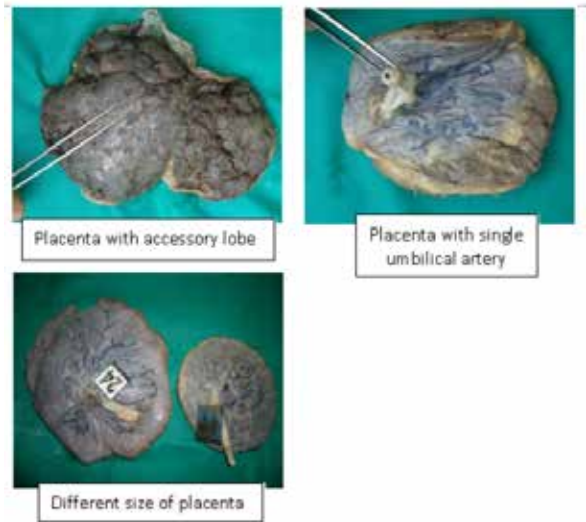
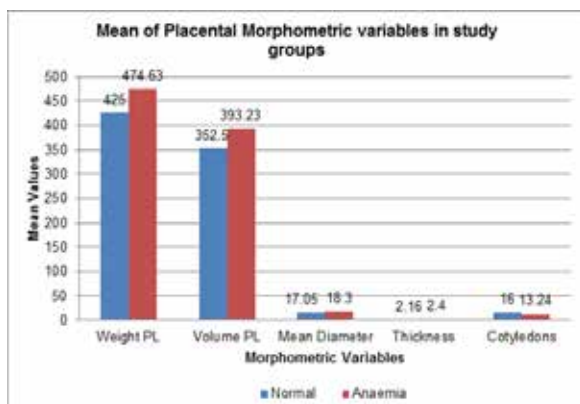


Table / Figure - 2 : Morphometry of placenta –

Parameter	Normal			Anaemia			Significant
	Mean	Std. Deviation	N	Mean	Std. Deviation	N	
Weight Pl	425.00	69.921	20	474.63	70.194	80	2.83 p<0.05
Vol. Pl	352.50	58.881	20	393.23	63.67	80	2.72 p<0.05
Mean diameter	17.050	1.8174	20	18.30	2.03	80	2.70 p<0.05
Thickness	2.160	0.2989	20	2.4	0.57	80	6.57 p<0.05
Cotyledons	16.00	2.357	40	13.24	3.107	80	4.38p<0.05

Table / Figure - 3



Nurunnabi, Khandaker Abu Rayhan. Microscopic Changes of the Placental Components in Maternal Anaemia. Bangladesh Journal of Anatomy: July 2010: Vol. 1965; 72:356-373.

10. Thangaleeta T. Vijayalaksmi P. Impact of anaemia in pregnancy. Ind J Nutri and Diet 1994;31[9]:251-256.

References :

- Anpei Hung D, Rendong Zhang, Zhengwei Yang. Quantitative study of placental structure in women with pregnancy iron deficiency fetal weight to placental weight. Br. J. Obstet and Gynaecol 1991; 98: 886-91.
- Agboola A. Effect of type and duration of Anaemia on placental weight and villous. Histology Journal of the National Medical Association. Vol. 71: No. 11: 1979.
- Beischer NA. Placental hypertrophy in severe pregnancy anaemia. BJOG : An international journal of obstetrics & Gynaecology. 1970 : Vol. 77: 398-409.
- Mongia SM, Jain SK. Placenta the wonder organ, original research paper. J.Indian Acad forensic med. April-June 2011. Vol. 33: No. 2.
- Singla PN, Chand S. Effect of maternal anaemia on the placenta and the newborn infant. Acta paediatrica. Vol 67. Issue 5. Pages 645-648. September 1978.
- Godfrey KM, Redman CWG, Barker DJP, Osmold C. The effect of maternal anaemia and iron deficiency on the ratio of fetal weight to placental weight. BJOG: 1991: 98:886-891.
- Lao TT, Tam KF. Placental ratio and anaemia in third trimester pregnancy. J Reprod Med Obstet Gynaecol. 2000: 45:923-928.
- Dhall U. Histological changes in placenta in anaemia : a quantitative study. JASI. 1994: 43:21-26.
- Mahamuda Begum, Shamim Ara, Segupta Kishwara, Abu Sadat Mohammad