A Study of Central Thickness of Placentae in Term, Premature and Post Term Pregnancies

Fatima Sherin[1], Ejaz Afzal[2], Omair Khan[3],Asad Ullah[4], Nazish Waheed[5], Hamza Sattar Khan[6].

ABSTRACT

Background: Preterm birth is a major cause of peri-natal morbidity and mortality. Post term pregnancy increases the risk of intra uterine death of fetus, birth asphyxia in labor and shoulders dystorcia. Most obsteticians and pediatritions would agree that the examination of placenta often helps in explaining an abnormal neo natal outcome.

Objectives: To correlate the thickness of preterm and post term placentae with the normal placental thickness.

Materials and Methods: This cross-sectional study was carried out in two steps, using the following groups at Departments of Obs & Gynae Khyber Teaching Hospital, Peshawar and department of Anatomy Khyber Medical College, Peshawar. Group A-50 normal full term placentae (delivered between 37-42 weeks of gestation). Group B-50 premature placentae (delivered between 35-37 weeks of gestation) from mothers having hypertensive disorder. Group C-50 post mature placentae (gestational age more than 42 weeks).

Results: The average central thickness of placentae in premature placenta was 1.60±0.31 cms, in term placentae it was 2.14±0.07 cms and in postmature placentae it was 3.14±0.37. there was a significant (P<0.001) difference in the placental central thickness between the maturity groups.

Conclusion: The study concludes that the hypertensive disorders of the pregnancy adversely influence the morphology of the placenta which leads to premature delivery. Certain changes may decrease the functional role of the placenta and contribute to the adverse reproductive outcomes.

Keywords: *Preterm, Posterm, Perinatal Morbidity, Dystorcia, Gestation,Asphyxia, Placenta,*

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INTRODUCTION

Preterm births refer to the birth of baby less than 37 weeks of gestation[1,2]. It accounts for 6%-10% of all births and it is a major cause of Perinatal morbidity and mortality[3,4]. Hypertension disorders of pregnancy are strongly associated with fetal growth restrictions. Post term pregnancy is defined as pregnancy longer than 42 weeks of gestation[5,6]. It increases the risk of intra uterine death of fetus, birth asphyxia in labor and shoulders dystorcia. After 42 weeks of gestation, the risk of still birth is 1 in 1000 pregnancies and after 43 weeks of gestation it is 1 in 500 pregnancies [7,1].

Placenta has drawn attention as valuable indicator for maternal and fetal diseases in recent years[8-10]. Many of the disorders of pregnancy which are associated with high Perinatal morbidity and mortality are accompanies by gross pathological changes in the placenta [3,11]

1. Department of Anatomy, Ayub Medical College, Abbottabad,
2. Department of Anatomy, Nowshera Medical College, Nowshera,
3. Department of Forensic Medicine, Ayub Medical College, Abbottabad,
4. Department of Anatomy Saidu Medical College, Swat,
5. Department of Anatomy North West School of Medicine, Peshawar,
6. Ayub Teaching Hospital, Abbottabad.

Correspondence: Dr. Ejaz Afzal
Associate Professor, Anatomy Department
Nowshera MedicalCollege, Nowshera
Email: drejazafzal@yahoo.com

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Morphologically placentae of the preterm deliveries are lighter in weight, less in diameter and thickness, with a higher incidence of abnormal shape and cord insertion[7,9]. In the case of post term deliveries the placentae are affected both grossly, microscopically and are unusually heavy. In adequate fetal perfusion is seen. There is an apparent collapse of the fetal circulation through the placentae[12,13]. The fetal villous blood flow is restricted and the under perfused villi show excessive stromal fibrosis and markedly increased formation of syncytial knots [14].

MATERIALS & METHODS

A total of 150 placentae were obtained for this study. 50 placentae were from full term deliveries, 50 placentae from hypertensive pre term deliveries and 50 placentae from post term deliveries. The ages of the patients chosen were between 20 to 25 years. Detailed obstetric and medical histories were taken from all cases, clinical examination done and they were subjected to following investigations:

Urine, sugar, albumin (microscopy) Blood Sugar, Hb%, Blood Grouping and Rh Typing. HIV, HBs Ag, Blood Urea and Uric Acid, Serum Creatanin Platelet Count Test for VDRL and Toxoplasmosis Liver function Test

Just after delivery all the placentae were collected in a clean tray. The membranes and cords at their attachments to the placenta were cut off. The placentae were gently expressed as to remove its blood contents and then washed thoroughly and wrapped with dry cotton pad. The following parameters were used for comparison among various study groups weight, diameter, thickness, sub chorionic fibrin. Retroplacental haematoma, infarction, calcifications. Determination of placental thickness (Central Thickness): The indirect method was used for measuring the central thickness of placentae because of the destructive nature of the direct method a toothpick was used to pierce placentae from the chorionic plate to the basal plate and each thickness was measured against a plastic ruler in centimeters and recorded.

RESULTS

In present study a total of 150 placentae were examined (50 term, 50 pre term and 50 post term). **Central Thickness**: The average central thickness of the premature hypertensive placentae was 1.60±0.31 cms, in term placentae it was 2.14±0.07 cms and in postmature placentae it was 3.14±0.37 cms. The central thickness range from 1.2 to 3.90 cms between the maturity groups. Maximum number of premature hypertensive placentae 49 (98%) had central thickness that ranged between 1.2 to 2.2 cms. Maximum number of term placentae 48 (96%) had central thickness that ranged between 1.66 to 2.21 cms. Maximum number of postmature placentae 49 (98%) had central thickness that ranged between 2.68 to 3.90 cms. So there was significant (P<0.001) difference in the placental thickness between the maturity groups.

DISCUSSION

Pre term birth is the major cause of Perinatal mortality and morbidity. For the last few decades it has become an important issue in public health policies of the developing world. Hypertensive disorders of pregnancy are one of the leading causes of prematurity which cause maternal mortality and perinatal morbidity. The etiology and pathogenisis of this disorder of pregnancy is still a subject of controversy. The classical view focuses on the placenta and uteroplacental circulation[12,17]. Post term pregnancy increases the risk of intra uterine death of the fetus. The placenta in these cases is affected both grossly and microscopically. There is a progressive diminishing of oxygen levels and saturation in cord blood as pregnancy advances beyond term[7]. Although the study of the placenta is retrospective in nature yet it provides a reflection of hazards the fetus has been subject to during its growth and development.[6,10] observed that placental pathology was quantitative rather than qualitative. Central thickness of the placentae: in present study the central thickness of the placentae was increased. Jones and Fox in 1978 observed that the central thickness increased in prolonged pregnancies. They attributed this increase to large size of the placentae.[7,13] also observed this increase in central thickness in post mature deliveries.

Alberto observed increase in central thickness in post mature cases[4].

Table 1: Placental central thickness among different groups

Variables	Premature Placentae (n=50) Number of Cases %	Term Placentae (n=50) Number of Cases %	Post Term Placentae (n=50) Number of Cases %	Total (n=50) Number of Cases %
Central Thickness (cms)				
1.2-1.65	31(62.0)	00	00	31(20.7)
1.66-2.21	18(36.0)	48(96.0)	1(2.0)	67(44.7)
2.22-2.67	00	2(4.0)	00	2(1.3)
2.68-3.13	00	00	11(22.0)	11(7.3)
3.14-3.59	1(2.0)	0	16(32.0)	17(11.3)
3.60-3.90	0	0	22(44.0)	22(14.7)

Central Thickness showed significant differences (P 0.001) between the maturity groups

CONCLUSION

In this study it was concluded that the hypertensive disorders of the pregnancy adversely influence the morphology of the placentae which leads to pre mature deliveries. These changes seem to be the result of the insufficiency of the placentae. The pathological changes in the gross morphology of the placentae adversely influence the perinatal outcome. In post term placentae increase thickness points towards the development of placental insufficiency leading to hypoxia. These changes may decrease the functional role of placenta and contribute to the adverse reproductive outcomes.

AUTHOR'S CONTRIBUTION

FS, EA, HSK: concept, data collection, literature search, statistical analysis, final write up.
OK, AU, NW: review of the article and proof reading

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