_____

Study of Anthropometric Measurements in New born Babies of mothers with co-morbid illness in North Karnataka

Preeti Amarkhed[1], Vijay Sheigji[2], Sachin Hatti[3], Charanraj Honnalli[4*]

[1]*Associate Professor, Department of Paediatrics ESIMC Kalaburagi, Karnataka, India*
[2]*Assistant Professor, Department of Paediatrics KBN Faculty of Medical Sciences, Kalaburagi, Karnataka, India*
[3]*Assistant Professor, Department of Paediatric GIMS Kalaburagi, Karnataka, India*
[4]*Associate Professor, Department of Paediatrics, Division of Neonatology KBN Faculty of Medical Sciences, Kalaburagi, Karnataka, India*

Abstract
Background: Anthropometric Parameters of new born babies are closely associated with various diseases of pregnant women including cardiovascular Diseases (CVD), HTN, and Gestational Diabetes nutritional status. Hence these parameters have clinical significance because they are product of illness of mother. **Method:** Out of 80 (eighty),40 (fourty) babies born to mother of pregnancy hypertension, 40 (fourty) born to mother of Gestational induced Diabetes mellitus were studied anthropometrically and compared with new born babies of healthy pregnant mothers. Weight was weighed by electronic weighing machine. Crown heel (CHL) length by infantometre and all remaining parameters by Tailors tape. **Results:** There was a significant variation in the anthropological parameters of Birth Weight, CHL, HC, CC, AC, MAC and TC in controlled pregnancy Induced HTN and Gestational Diabetes mellitus mothers of new born babies. **Conclusion:** These variations in new born of PIH and GDM mothers parameters will be the tools for neonatal or paediatrician to diagnose the morbidity, mortality and future health status of new born.
Keywords: Electronic weighing machine, Infantometre, Tailors tape, PIH, GDM, Anthropometric.

Introduction
Anthropometric studies in new born are important because the variable in different populations, and regions of country[1,2] reflects changes in nutritional status and illness of pregnant women. Hence they are the tools to evaluate foetal, maternal health; environmental factors influence both foetus and pregnant mothers[3]. Perinatal morbidity and mortality are related to growth restraint in utero which presents as LBW (Low Birth Weight) infant is at risk at birth, perinatally and in early life. The role maternal nutritional status, disease during pregnancy associated with reduced or abnormal parameters in new born babies. The cardiovascular diseases, increased blood pressure, High rate of lipid profile, type-DM mothers will have misappropriate babies (having abnormal anthropological parameters)[4]. Apart from variations in anthropological parameters of new born will be associated with congenital anomalies, some might be still born too. This study was carried out to evaluate and correlate the variations in anthropologically parameters of new born with illness during pregnancy.

Material and Method
80 new born babies delivered at KBN teaching and general hospital born to mother with co-morbid illness were studied.

Inclusive Criteria
Newborn born to mothers who had co-morbid illness like pregnancy Induced Hypertension (PIH) and Gestation Diabetic Mellitus (GDM) were selected for studies.
Exclusion Criteria

_____

*Correspondence
Dr. Charanraj Honnalli
Associate Professor, Department of Paediatrics, Division of Neonatology KBN Faculty of Medical Sciences, Kalaburagi, Karnataka, India
E-mail: craj9192@gmail.com

Mother having disease like epilepsy, Cardio Vascular Disease (CVD), immune compromised were excluded from study.
Method
40 new born mothers had PIH, 40 newborn mothers had GDM, 40 newborns born to healthy mothers were also studied. The anthropometrical parameters were seen in controlled, PIH and GDM . Body weight was weighed by using electronic weighting scale machine and CR length by using Infantometre and remaining anthropological parameters by using Tailors tape. Head circumference was measured after 24 hours after birth because of oedema and effect of head moulding during parturition, chest circumference was taken at the level of nipples, abdominal circumference just above the umbilical cord, mid-arm circumference between tip of olecranon and olecranon process. Thigh circumference at the lowest level of gluteal furrow of the thigh and recorded.Duration of study was August-2019 to January-2021.
Statistical analysis
Various anthropological parameters in all three groups were recorded and studied statistically to know the mean values of each parameter. The statistical data was performed in SPSS software. The ratio of male and female new born was 2:1.
Observation and Results
Table-1: The controlled (Normal) new born parameters of Birth weight – 3.80 (SD±1.5), 2.19 (SD±0.58) in PIH, 3.60 (SD±0.15) in GDM,
CHL parameter – 48.30 (SD±3.23) in controlled, 43.60 (SD±3.22) in PIH, 51.20 (SD±0.44) in GDM,
Head Circumference (HC) – 33.50 (SD±2.30) in controlled, 31.20 (SD±1.10) in PIH, 35.31 (SD±1.13) in GDM,
Chest Circumference (CC) – 31.15 (SD±2.37), 29.63 (SD±2.11) in PIH, 33.10 (SD±.1.19) in GDM,
Abdominal Circumference (AC) – 29.64 (SD±1.20) in controlled, 28.42 (SD±2.02) in PIH, 32.01 (SD±0.10) in GDM.
Mid-Arm Circumference (MAC) – 9.60 (SD±1.20) in controlled, 9.33 (SD±1.19) in PIH, 12.01 (SD±0.11) in GDM,
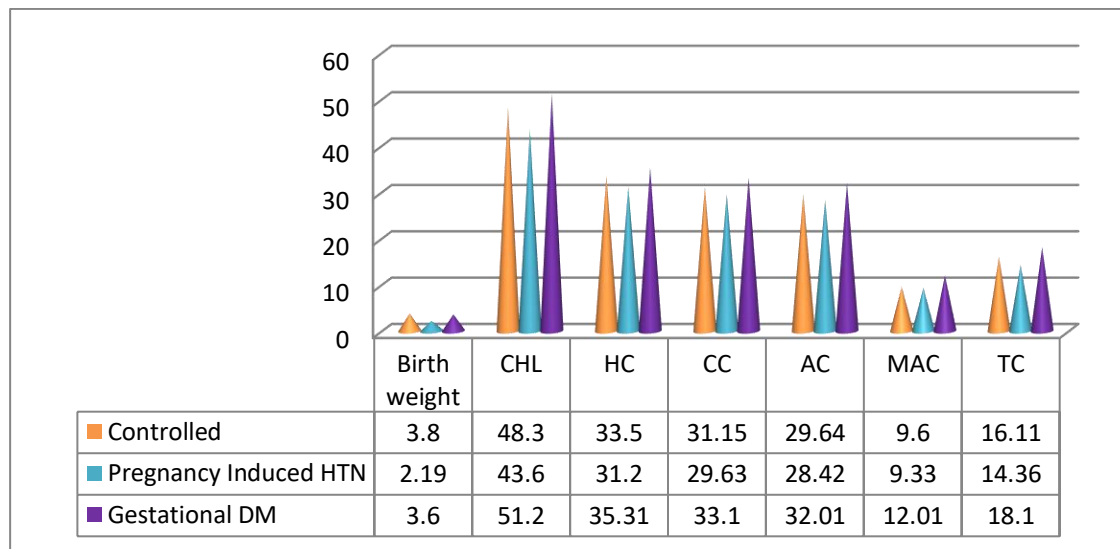Thigh Circumference – 16.11 (SD±2.12) in controlled group, 14.6=36 (SD±1.69) in PIH, 18.10 (SD±0.12) in GDM.

_____

Table 1: Anthropometric Measurements in New born Babies of mothers with co-morbid illness

Maternal Illness	Birth weight	CHL	HC	CC	AC	MAC	TC
Controlled	3.80 (SD±1.5)	48.30 (SD±3.23)	33.50 (SD±2.30)	31.15 (SD±2.37)	29.64 (SD±1.20)	9.60 (SD±1.21)	16.11 (SD±2.12)
Pregnancy Induced HTN	2.19 (SD±0.58)	43.60 (SD±2.10)	31.20 (SD±1.10)	29.63 (SD±2.11)	28.42 (SD±2.02)	9.33 (SD±1.19)	14.36 (SD±1.69)
Gestational DM	3.60 (SD±0.15)	51.20 (SD±0.44)	35.31 (SD±1.15)	33.10 (SD±1.19)	32.01 (SD±0.10)	12.01 (SD±0.11)	18.10 (SD±0.12)

CHL=Crown Heal Length, HC=Head Circumference,
CC=Chest Circumference, AC=Abdominal Circumference,
MAC=Mid-Arm Circumference, TC=Thigh Circumference

Fig 1:Anthropometric Measurements in New born Babies of mothers with co-morbid illness

Discussion

The present study of anthropometric measurements in new born babies of illness mothers, Birth weight – 3.80 (SD±1.15) in controlled, 2.19 (SD±.58) PIH, 3.60 (SD±0.15) in GDM, CHL – 48.30 (SD±3.23) in controlled, 43.60 (SD±0.58) in PIH, 3.60 (SD±0.15) in GDM. HC – 33.50 (SD±2.30) in controlled, 31.2 (SD±1.10) in PIH, 35.31 (SD±1.15) in GDM. CC – 31.15 (SD±2.37) in controlled, 29.6 (SD±2.11) in PIH, 33.10 (SD±1.19) in GDM. AC – 29.6 (SD±1.20) in controlled, 28.4 (SD±2.02) in PIH, 32.01 (SD±0.10) in GDM. MAC – 9.60 (SD±1.21) in controlled, 9.33 (SD±1.19) in PIH, 12.01 (SD±0.11) in GDM. TC – 16.11 (SD±2.12) in controlled, 14.36 (SD±1.69) in PIH, 18.10 (SD±0.12) in GDM (Table-1). These findings are more or less in agreement with previous studies[5,6,7].Variations in the parameters of new born are associated with younger maternal age, maternal short stature, complicated pregnancies, maternal hypertension, toxaemia of pregnancy repeated intake of coffee, tea or alcohol, smoking during pregnancy[8], repeated induced abortions, pre-mature rapture of membrane and close birth spacing[9], lead to abnormal anthropometric parameters. Apart from, this nutritional status causes impaired foetal growth, CR length at birth inversely related to glycosalated haemoglobin levels and serum total concentrations of pregnant women. Chronic under nutrition retards the foetal growth.

Younger mothers had lighter, shorter, smaller head circumferential babies with lighter placenta. In second and third trimesters reduced haemoglobins was negatively associated with size of foetus[10]. Hence haemoglobin is a feature of normal pregnancy and Haemoglobin concentration exceeding 12.5 g/dl indicates inadequate haemoglobin. Anaemia in pregnancy likely to associated with abnormal size of foetus.

Summary and Conclusion

Present study of variations in anthropometric parameters in new born. It due to malnutrition, illiteracy, teenage pregnancies, low family income, poor antenatal visits, close birth spacing and pregnancy induced medical aliments have strong associations. But this study demands further genetic, embryological, patho-physiological, hormonal study because exact factors associated with morphology of foetus is still un-clear.

- This research paper was approved by ethical committee KBN Medical College Kalburgi-585101, Karnataka.

Reference
1. Tanner JM – Growth as a mirror of the conditions of the society. Secular trends and class distinctions Acta paediatrics Japonica 1987, 29; 96-103.
2. Neyz O, Saka HN – Anthropometric studies in Turkish Babies Istanbul Medical faculty Journal 2002, 65: 221-28.
3. Martinez A, Simnons R – Abnormalities foetal growth. In Tauscher new born Philadelphia Elsevier Saunders 2005, 32-33.
4. Langley SC, Jackson AA – Increased systolic Blood pressure in adult rats induced by foetal exposure to maternal low protein diet Clin. Sc. 1994, 86, 217-222.
5. Stoll BJ, Kleigman RM – The high risk infants Nelsons text book of paediatrics 17th editions Philadelphia WB sounder 2004, 547-59.
6. WHO low birth weight tabulations of available information WHO/MCH/92.2.1992 1-2
7. Shrimpton R – Preventing low birth weight and reduction of child mortality Trans. R. Soc. Trop. Med. Hyg. 2003, 97; 39-42.
8. Rizvi SA, Hatcher J – Maternal risk factors associated with low birth weight in Karachi East. Medieterr. Health J. 2007, 13, (6), 1343-52.
9. Khan M, Jamal M – Maternal risk factors associated with low birth weight J. Coll. Phys. Surg. Pak. 2003, 13(1), 25-8.
10. Poppitt SD, prentice AM – Energy sparing strategies to protect human foetal growth Am. J. Obstet. Gynaecology. 171, 118-125

Conflict of Interest: Nil   Source of support: Nil