ESTIMATION OF FOETAL CEPHALIC INDEX IN UTERO DURING VARIOUS PERIODS OF PREGNANCY BY ULTRASONOGRAM AND THEIR CORRELATION TO GESTATIONAL AGE IN THE GARHWALI POPULATION

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CONTENTS

Summary & Conclusion

Estimation of the exact date of confinement by the obstetricians has been for a long time calculated by the Nagele's rule (LMP plus 7 days minus 3 months). Estimation of an accurate gestational age is essential by which an obstetrician will be successful in managing an antenatal patient. Many a times the patients do not remember their exact date of LMP.

Estimation of gestational age on the basis of measurement of the biparietal diameter by the ultrasonographic methods is being followed in most of the hospital. Various workers like Hadlock et al[6], Berger et al[20], Dewhurst et al[21], Sabbagha etal [23] Campbell [24], Parker et al [26], Dubowitz and Goldberg et al [27], Okupe et al [28], Varma [32] have observed the changes in the BPD at various gestational ages. They have also laid down the various table by which gestational age can be estimated by a given BPD.

Estimation of gestational age from a given cephalic index have also been done by workers like Hadlock at el[6], Garson [13], Williams et al [12], Rajlakshmi et al[15], Jeanty et al[8], Shields et al[16], Levi and Erbsman[17], Tuli et al[11] and others.

However racial variations in cranial measurements have also been reported by Williams et al[12], Rajlakshmi et al[15], Dubowitz and Goldberg[27] and Sabbagha et al[23].

The present study was conducted in the Himalayan Institute of Medical Sciences, Swami Ram Nagar, Doiwala,

Dehradun on 25 pregnant Garhwali women visiting the hospital during the various periods of pregnancy.

The patients selected had singleton pregnancy, known LMP and had no history of any oral contraceptives intake within two months of their confinement, had no complications during their pregnancy and were free from any systemic disorders like diabetes, hypertension.

The observations have been made by measuring the fronto-occipital diameter, biparietal diameter and thereby estimating the cephalic index by the ultrasonographic methods by using Siemens ultrasonographic equipment.

Cephalic index was thereby calculated and related with the gestational age on the basis of their known LMPs.

The observation were then tabulated and linear regression equation was derived separately for the estimation of gestational age, on the basis of fronto-occipital diameter biparietal diameter and cephalic index.

The following conclusions were made from the above study :

- The various readings recorded and the tabulations made were statistically significant with the p-value < 0.05. The linear regression equation for the estimation of gestational age on the basis of a given cephalic index in the Garhwali population was thereby derived as y =

—469.5 + 8.3248 x , where y denotes gestational age in days and x denotes the cephalic index. By the above regression equation, it was suggested that with an increase of cephalic index of 0.5, gestational age increased by 4.1624 days (0.5946 weeks).

- The gestational age calculated from the regression equation of cephalic index y = -469.5 + 8.3248 x correlates *well* with the actual gestational age (from LMP) to within 2-3 weeks during 20-32 weeks.

- From the above equation of cephalic index, it is suggested that with an increase of the cephalic index of 0.5, gestational age increased by 4.1624 days (0.5946 weeks) .

- The gestational age calculated from the regression equation of FOD y = 21.104 + 1.8666 x correlates *well* with the actual gestational age (from LMP) to within 1-2 weeks during 16-36 weeks.

- From the regression equation of FOD, it is suggested that with an increase of 1mm in FOD, gestational age increases by 1.8 666 days (0.2667 weeks).

- The gestational age calculated from the regression equation of BPD y = 31.413 + 2.2406 x correlates *well* with the actual gestational age (from LMP) to within 1-2 weeks during 16-36 weeks.

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