SUMMARY

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It was an analytical epidemiological hospital based study done in the purview of the Department of Anatomy in collaboration with the Department of Radiodiagnosis of North Bengal Medical college and Hospital, Sushrutanagar, Dist. Darjeeling; the only medical teaching institution in the northern part of West Bengal.

An effort has been made in this study to correlate fetal kidney length with the gestational age by analysing the observations, correlating the findings with that of other biometric parameters and concluded to a decision.

The subset of antenatal mothers attending the ultrasonography clinic was interviewed and maintaining the inclusion and exclusion criteria finally 939 subjects were included in this study.

The frequency distribution of antenatal mothers according to their age, where majorities (44.2%) were below 25years; 27.7% were in 25-29 years and rest 28.1% of them above 30years and age group wise mean distribution of fetal kidney length was not significantly different in different gestational weeks of different aged antenatal mothers.

Again, frequency distribution of antenatal mothers according to their gravida, 54 % (511) was primigravida and 46 %(428) was multigravida and it was found that there was no significant difference in the fetal kidney length related to the gravida of the mother in different gestational age.

In the analysis it was also found that the age group wise mean distribution of fetal kidney length was not significantly different in different gestational weeks of different aged antenatal mothers. The mean effect of fetal kidney length of different gestational age groups were not significantly different ($p > 0.05$). So, there was no significant difference in the fetal kidney length whether right or left kidney was measured.

It was further observed in this study that the assessment of gestational age by the widely used conventional biometric parameters like Biparietal diameter (BPD), Head circumference (HC), Abdominal circumference (AC) and Femoral length (FL) correlated very well with fetal kidney length when compared individually and in combination. This signified that fetal kidney length may be used as another fetal biometric parameter like BPD,HC,AC and FL.

In further analysis it was found that the fetal kidney length (mm) showed an inclination with standardised gestational age by 8.74% during 24 to 28 weeks of gestational age, 22.26% during 29 to 32 weeks of gestational age, 46.05% during 33 to 36 weeks of gestational age and 72.38% during 37 to 40 weeks respectively and it was found from the histogram (Figure No: 15), that the fetal kidney length (mm) was not so much linear in early pregnancy till 32 weeks but was very much linear in late pregnancy i.e. 33weeks to term.

In this study the linear regression coefficient of the fetal kidney length was 0.98 with a standard error of 0.005 and p value of 0.000; The correlation coefficient: $r = 0.98$

As the correlation coefficient (r) value was very close to +1, the fetal kidney length in millimeter was strongly related with the gestational age in weeks.

If the fetal kidney length in millimeter(mm) was considered as equivalent to gestational age in weeks then the maximum variation found in 24 weeks of gestation i.e. 1.244×2= 2.488 weeks = 2.488× 7= 17.416 days and minimum of 0.4148 ×2=0.8296 × 7= 5.8072 days. So, from the above calculation it was found that the variation in determination of gestational age in relation to fetal kidney length at term was ± 6 days and 95% CI (Confidence interval).

Finally in the present study an equation was found based on the regression coefficient;

Gestational Age in weeks(Y) = 0.963 x X [FKL(mm)] + 1.165(y intercept).

(Where Slope m = 0.963 and Constant = 1.165.).