

Transverse cerebellar diameter: alternative parameter for gestational age assessment in Northern Nigeria

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Objective

To determine the accuracy of transcerebellar diameter in gestational age (GA) estimation in healthy women with singleton pregnancies, using last menstrual period (LMP) as a gold standard.

Methods

Consecutive 400 clinically established pregnant women of age range 19-44 years in second and third trimesters (14 to 40 weeks) as determined by the first day of the last menstrual period were examined. Transabdominal scans were performed and fetal biometric parameters (BPD, FL and TCD) were measured for estimation of GA of the fetuses. Intraclass correlation was used to test for agreement between the TCD based GA estimation and LMP. Association between TCD parameter and LMP was tested using Pearson's correlation test.

Results

Four hundred (400) pregnant women aged 19-44 years with mean \pm SD of 29.96 \pm 5 years were involved in the study. Seventy-three and half percent of the patients were examined in the third trimester with only 26.5% in the second trimester. TCD measurements at different gestational ages showed increased size of the fetal cerebellum with advancing gestation with least variation from the mean. Karl Pearson's correlation between GA and the TCD measurement showed strong positive correlation throughout the assessed period and the relationship was linear ($r=0.982$; $P=0.0001$). Intra class correlation coefficient shows agreement between the TCD Measurement and LMP. TCD showed high intra-class correlation coefficient (ICC) of 0.984 in second trimester and 0.956 in the third trimesters.

Conclusion

Transcerebellar diameter can be used as single parameter to predict gestational age of normal fetuses of pregnant women not sure of their last menstrual period as this parameter is reliable and more accurate, and not affected by measurement problems commonly encountered in BPD and FL, and correlated better with LMP.

Table 1. BPD, FL and TCD measurements during different gestational ages.

GA (weeks)	BPD (mm)		FL (mm)		TCD (mm)	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
14-20	28.5	56.6	15.4	39.2	14.3	24.0
21-30	36.2	92.2	33.8	68.3	22.9	50.7
31-40	73.9	99.0	55.7	79.0	30.8	56.8

Table 2. Pearson Correlation of LMP GA with BPD, FL and TCD GA.

Parameters Compared	R	R ²	P-value
GA Vs BPD	0.969	0.939	0.0001
GA Vs FL	0.973	0.947	0.0001
GA Vs TCD	0.982	0.964	0.0001