Comparison Between Transcerebellar Diameter with Biparietal Diameter and Femur length for Gestational Age Measurement Accuracy in Third Trimester of Pregnancy

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List of abbreviations

LMP…….....Last Menstrual Period

TCD……..Transcerebellar Diameter

BPD……..Biparietal Diameter

FL…….Femur Length

CNS…….Central Nervous System

CRL…….Crown rump Length

Fig……...Figure

mm……..Millimeter

GA……..Gestational age

CA…….. Conceptional age

EDD……... Expected date of delivery

HC…….. Head circumference

AC…….. Abdominal circumference

PPV…….Positive Predictive Value

BMI…….Body Mass Index

DFE……. Distal femoral epiphysis

CI…….Cephalic index

IUGR……... Intra uterine growth retardation

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ABSTRACT

Introduction and aim of the study

Many patients in our country come for their first antenatal care visit in their third trimester not remembering their LMP or their EDD which makes it very difficult for the physician to assess their gestational age .In this study we compare between the Transcerebellar diameter and Biparietal diameter and Femur length in accuracy of assessment of gestational age in third trimester.

Patients and methods

This study included 200 patients sure of their dates and fulfilling the inclusion criteria at the department of Obstetrics and Gynecology , Kasr Alainy Cairo University starting from June 2015 till March 2016,the whole patients were pregnant in their third trimester and the Transcerebellar diameter and Biparietal diameter and Femur length were measured.

Results

TCD was accurate within 1 week in 90% of the cases and was accurate within 3 days in 59% of the cases. While the FL was accurate within 1 week in 80% of the cases and was accurate within 3 days in 46% of the cases. Finally the BPD was accurate within 1 week in 60 % of the cases and within 3 days in 29.5% of the cases.

Conclusion

TCD is the most accurate method for assessment of gestational age in third trimester followed by FL, and the least accurate is the BPD. Also by combining accuracy of TCD (90%) and that of FL (80%) we can be near certain of gestational age in most of our patients even if they are unsure of their dates.

Aim Of The Study

The aim of this study was to detect an accurate method for assessment of gestational age in third trimester of pregnancy comparing the Transcerebellar diameter , Biparietal diameter and femur length.

This study is important especially in our country as many of our patients attend the hospitals without medical record or previous antenatal care visits especially in low socioeconomic standards, not remembering their LMP or their EDD which in return makes it very difficult on the physician to assess the gestational age of the fetus. Uncertain gestational age has been associated with adverse pregnancy outcomes including low birth weight, preterm delivery and perinatal mortality, post term pregnancy and macrosomia.

So our target was to reach the most accurate method to assess the gestational age in third trimester of pregnancy through comparing different methods ,TCD and BPD and FL, among 200 female pregnant in their third trimester sure of their LMP or EDD.

INTRODUCTION

Introduction

The provision of obstetric and neonatal care, as well as the public health monitoring of pregnancy outcomes, relies upon the accurate determination of gestational age. Uncertain gestational age has been associated with adverse pregnancy outcomes including low birth weight, preterm delivery and perinatal mortality, independent of maternal characteristics.

The use of ultrasonography has significantly improved the evaluation of fetal growth and development and has permitted prenatal diagnosis of a variety of congenital malformations. Ultrasonographic fetal biometry is highly reliable in first and second trimester of pregnancy but reliability of any ultrasound method greatly diminishes as gestational age advances, in third trimester, reliability of any single ultrasound parameter alone is poor without correlation with other parameters **(Naseem et al., 2013; Satish Prssad and Likhitha, 2014)**.

Many patients in our setup due to socio-economic reasons come for their first antenatal visit in third trimester. Most of them are uneducated come from remote areas. Also many being lactating mothers unsure of their LMP or having irregular cycles because of non availability of any dating scans or earlier ultrasound and uncertainty in LMP, it becomes very difficult to calculate their due dates, so many pregnancies considered to be preterm or posterm are wrongly classified. **(Satish Prssad and Likhitha, 2014).**

In third trimester, various ultrasound parameters including femur length which is the most commonly used parameter for the assessment of gestational age, yet it shows margin of error 2 - 3 weeks from the actual gestational age **(Naseem et al., 2014).** Also the biparietal diameter (BPD) that is commonly used shows margin of error of 3 – 4 weeks from actual gestation because of the large biological variations in fetal skull shape and size **(Naseem et al., 2013).** Since the last decades, ultrasound parameter 'transcerebellar diameter (TCD)' is considered a more accurate and better predictor of gestational age in both normal and intrauterine growth retardation (IUGR) **(Julia et al., 2012).** The fetal cerebellum visualized

as early as 10 – 20 post- menstrual weeks. It grows in a linear pattern in the second trimester but the curve flattens in third trimester. Many studies states that TCD normogram predicts gestational age with accuracy of 90% in the third trimester **(Goel et al., 2010).**

In our study, we correlated between the three parameters, Transcerebellar (TCD) and Biparietal diameter (BPD) and Femur length (FL), for accurate determination of gestational age in third trimester of pregnancy.