

Abstract

Prediction of gestational age (GA) based on sonographic fetal parameters is perhaps the cornerstone in modern obstetrics and continues to remain an important component in the management of pregnancies with fetuses who have growth disturbances. The aim of the study was to estimate fetal age by measuring cerebellar diameter (CD) in second and third trimester using ultrasound. The data of this study collected from 50 pregnant ladies selected conveniently in Omdurman delivery hospital from July 2015 to December 2015. The result of this study showed a significant correlation between the GA-LMP and GA-BPD, GA-FL and GA-CD which were 0.937, 0.925, and 0.858 respectively. The result of this study showed that the mean value of the CD was 3.20 ± 0.88 cm, where BPD was 6.85 ± 1.60 cm also FL was 5.26 ± 1.56 cm. The average GA using CD was a 26.47 ± 5.46 week versus 26.37 ± 6.33 weeks using LMP. There is no significant difference between the LMP calculation of GA and GA estimated using CD. The result also showed that GA increases by 6.2 weeks/cm of CD. it conclude that CD can be used to estimate the GA with an accuracy more than 74% i.e. the CD can explain more than 74% of the changes occur in the GA.

مستخلص

التنبؤ بعمر الجنين يعتمد علي الموجات فوق الصوتيه, الموجات فوق الصوتيه هي حجر الأساس في تخصص النساء و التوليد الحديث ويستمر في البقاء عنصرا هاما في إدارة حالات الحمل مع الأجنة الذين لديهم اضطرابات النمو. من اهداف هذه الدراسة قياس قطر المخيخ في الثلوث الثاني والثالث من الحمل باستخدام الموجات فوق الصوتيه. هذه الدراسه جمعت من 50 سيده حامل من مستشفى الدايات ام درمان في الفتره من يوليو الي ديسمبر 2015. اوضحت نتائج هذه الدراسه وجود علاقة بين عمر الجنين و اخر دوره شهريه و بين اخر دوره شهريه وعمر الجنين وطول عظم الفخد وبين اخر دوره شهريه و قطر المخيخ التي كانت 0.927، 0.925، 0.858 على التوالي. وتظهر الدراسة أيضا الوسط الحسابي لقطر المخيخ الذي كان 3.20 ± 0.88 سنتيمتر, و منطقه العظم الجداري لراس الجنين كان 6.85 ± 1.60

سنتيميتر، وطول عظم الفخذ كان 5.26 ± 1.56 سنتيميتر. متوسط عمر الجنين

باستخدام قطر المخيخ كان 26.47 ± 5.46 أسبوع مقارنة 6.33 ± 26.37 اسبوع

باستخدام وآخر دورة شهرية. ليس هناك فرق كبير بين حساب عمر الجنين

باستخدام اخر دوره شهريه وتقدير عمر الجنين باستخدام قطر المخيخ. اظهرت

الدراسه ايضا زياده عمر الجنين بنسبه 6.2 اسابيع/سنتيميتر من قطر المخيخ. في

الختام نجد ان قطر المخيخ يمكن ان يستخدم لتقدير عمر الجنين بدقه اكبر من

74%. هذا يعني ان قطر المخيخ يمكن ان تفسر اكثر من 74% من التغيرات التي

تحدث في عمر الجنين.

الايه:

(لَا يُكَلِّفُ اللَّهُ نَفْسًا إِلَّا وُسْعَهَا لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا اكْتَسَبَتْ رَبَّنَا لَا تُؤَاخِذْنَا إِنْ نَسِينَا أَوْ أَخْطَأْنَا رَبَّنَا وَلَا تَحْمِلْ عَلَيْنَا إِصْرًا كَمَا حَمَلْتَهُ عَلَى

الَّذِينَ مِنْ قَبْلِنَا رَبَّنَا وَلَا تَحْمِلْنَا مَا لَا طَاقَةَ لَنَا بِهِ وَاعْفُ عَنَّا وَاعْفِرْ لَنَا
وَارْحَمْنَا أَنْتَ مَوْلَانَا فَانصُرْنَا عَلَى الْقَوْمِ الْكَافِرِينَ)

صدق الله العظيم

البقره الايه)

(286

Dedication

..... To my beloved mother who is support me
in my life.... May Allah al mighty bless her....

Acknowledgements

I would like to thank Allah for giving me strong well throughout my life at look always for the best.

I would like to thank my supervisor, **Dr. Mohammad Elfadil Mohamed Gar Elnabi** who assist me in every point and actively assist in the completion of this research and continued encouragement to be completed in the best possible way.

I would like to thank Uz. **Hussein Abdalrahman Dinar** and Uz. **Mona Alhaj** for helping me in this research

List of contents:

Contents	Page
Abstract	I
Abstract (Arabic)	II

	III
	IV
	V
	VI
	VIII
	IX
	X
Chapter One: Introduction	1
1-1 Problem of the study	2
1.2 Objectives	3
1-3 Significant of the study	4
1.4 Overview of the study	4
Chapter two: Background	5
2.1. development of the Cerebellum	5
2.1.1 Cerebellum	6
2.1.2 Fetal head Shapes	6
2.1.3 Fetal Scalp	10
2.1.4 Anomalies of the Fetal Head	11
2.2 Previous study	20
Chapter three: Material and method	25
3.1. Study design	25
3.2. Study population	25

3.3 Study area and duration:	25
3.4. Sample size and type	26
3.5. Material	26
3.6. Method of data	26
3.7. Variable of data collection	27
3.7.1. Data analysis	28
Chapter four	29
Results	29
Chapter five	35
5.1 Discussion , Conclusion and Recommendations	35
References	39
Appendix	41

List of Abbreviations:

GA	Gestational age
CD	cerebellar diameter
BPD	biparietal diameter
HC	head circumference

AC	abdominal circumference
FL	femur length
LMP	last menstrual period
OFD	occipitofrontal diameter
NTD's	neural tube defects
ABS	amniotic band syndrome
LBWC	limb-body-wall complex
CPC	Choroids Plexus Cysts
CP	Choroids Plexus
CSF	Cerebrospinal fluid
TCD	Trance cerebellar diameter
IUGR	intrauterine growth retardation

List of Figures:

Figures	Page No
4-1 shows sector plot demonstrates the	35

relationship between GA-LMP and CD	
4-2 shows sector plot demonstrates the relationship between GA-LMP and FL	35
4-3 shows sector plot demonstrates the relationship between GA-LMP and BPD	36
4-4 shows sector plot demonstrates the relationship between GA-CD and LMP	36
4-5 shows sector plot demonstrates the relationship between GA-FL and LMP	37
4-6 shows sector plot demonstrates the relationship between GA-BPD and LMP with	37
4-7 shows sector plot demonstrates the relationship between GA- LMP and CD in 2nd trimester	38
4-8 shows relationship between GA- LMP and CD in 3rd trimester	38

List of tables:

Tables	Page No
Table 4-1 shows the Mean and SD	33
Table 4-2 shows Pearson Correlation	33
Table 4-3 shows paired samples test	34