



Sudan University of Sciences
and Technology



College of Graduate Studies

Assessment of Uterine Artery in Pregnancy
Induce Hypertension by Using Colour Doppler

**نقويج دراسة للشريان الرحمي عند ارتفاع ضغط الدم
المصاحب للحمل بواسطة دوبلر الملون**

Research submitted for partial fulfillment for requirement of
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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

قال تعالى: {وَلَقَدْ خَلَقْنَا الْإِنْسَانَ مِنْ سُلَالَةٍ مِّنْ

طِينٍ ﴿١٣﴾ ثُمَّ جَعَلْنَاهُ نُطْفَةً فِي قَرَارٍ مَّكِينٍ ﴿١٤﴾ ثُمَّ

خَلَقْنَا النُّطْفَةَ عَلَقَةً فَخَلَقْنَا الْعَلَقَةَ مُضْغَةً فَخَلَقْنَا

الْمُضْغَةَ عِظْمًا فَكَسَوْنَا الْعِظْمَ لَحْمًا ثُمَّ أَنْشَأْنَاهُ

خَلْقًا آخَرَ فَتَبَارَكَ اللَّهُ أَحْسَنُ الْخَالِقِينَ ﴿١٥﴾ }

صدق الله العظيم

(سورة المؤمنین الآیة (12-14))

Dedication

To my family

Every person who help me in this
research

With great deal to my teacher who
guided me

Acknowledgment

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Abstract

The aim of this study was to examine the value of one step uterine artery Doppler at first and second trimester of pregnancy in the prediction of PIH (Pregnancy Induce Hyperion) and/ or intra uterine growth restriction (IUGR). Uterine blood flow study resistance index (R1) and pulsatility index (PI) of uterine artery were calculated.

This is a cross sectional hospital based control study conducted in Alturky Hospital (outpatient clinic) from 2014 to 2015. The study included 50 women with singleton pregnancies at 12- 24 weeks of gestation who had history of PIH, low birth weight fetus and, or unexplained prenatal fetal death in their previous pregnancy.

The study shows that (30%) of this study population had high (R1) and (P1) with low blood flow. Most of cases (73%) > 14 weeks of gestation, with average age of 37 years old PIH was the most frequent risk factor.

Doppler ultrasound provided more accurate prediction when performed in the second trimester than in first trimester an increased resistivity and pulsatility index alone or with notching was the best predictor of PIH among high risk patients and it is the most predictive Doppler indices.

ملخص البحث

هدفت الدراسة لبحث الفائدة من ملاحظة سريان الدم في الشريان الرحمي وقياس مؤشراتته المختلفة وذلك باستخدام تقنية الموجات فوق الصوتية والدوبلر في فترة الثلاثة أشهر الاولى والثانية من الحمل باحتمال حدوث ارتفاع ضغط الدم المصاحب للحمل مما يؤدي الى ضعف نمو الجنين وولادة طفل اقل من الوزن المتوقع.

اوضحت الدراسة أن اكثر من ثلثي السيدات لديهن تغيير في مؤشرات الدوبلر المختلفة مع انخفاض في كمية سريان الدم، وأن أكثر من ثلثي السيدات في الثلاثة اشهر الثانية للحمل مع متوسط عمر سبعة وثلاثون عاماً ومعظمهن لديهن تاريخ مزمن في ارتفاع ضغط الدم المصاحب للحمل.

هذه دراسة وصفية مقطعية اجريت في المستشفى التركي بحي الكلاكلة اللفة بالخرطوم في الفترة من 2014 وحتى 2015م. شملت الدراسة عدد خمسون من النساء الحوامل اللاتي ترددت على العيادة الخارجية في هذه الفترة، جميعهن حوامل بجنين واحد بين اثنتي عشر واربعة وعشرون اسبوعاً من الحمل واللاتي لديهن تاريخ اصابة بارتفاع ضغط الدم المصاحب للحمل أو ضعف نمو الجنين أو وفاة طفل في الفترة ما بين الاسبوع السادس والعشرون وحتى الاسبوع الاول من العمر في حملهن السابق.

اثبتت الدراسة أن فحص الموجات فوق الصوتية في الثلاثة اشهر الاولى في ارتفاع ضغط الدم المصاحب للحمل ومضاعفاته وأن الارتفاع أو التغير في مؤشرات الدوبلر المختلفة قد تساعد في التنبؤ بحدوث هذه المضاعفات خاصة بين حالات الحمل العالية الخطورة.

Abbreviations

APTT	Activated prothrombin time
ACOG	American College of obstetrician and gynecologist
AFI	Amniotic fluid index
ALT	Alanine Amino trenceferase
AST	Aspartate amino transfrease
BP	Blood pressure
CBC	Complete blood count
BPP	Biophysical profile
CNS	Central nervous system
CT	Computerize tomography
DN	Diastolic Notch
HELLP	Hemolysis elevated liver enzymes low platelets count
HIV	Human immunodeficiency virus
HSV	Herpes simplex virus
IV	Intravenous
IUGR	Intrauterine growth restriction
LDA	Lactate dehydrogenase
NST	Non stress test
NHBPEP	National high blood pressure education program
PE	Preeclampsia
PI	Pulsitivity index
PIH	Pregnancy induced hypertension

PT	Prothrombin time
RI	Resistive index
S/D	Systole / diastole ratio
TORCH	Toxoplasma, rubella, cytomegalovirus, and herpes simplex virus
WHO	World Health Organization
A	Artery
BPD	Bi Paralatal Diameter
AC	Abdominal Circumference
HC	Head Circumference

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