Prognostic Significance of Uterine and Ovarian Artery Doppler Velocimetry in Clomiphene Citrate Cycle in Patients with Polycystic Ovary Syndrome

Thesis

Submitted for partial Fulfillment of Master Degree
In Obstetrics & Gynecology

By

Galal Alden Mokhtar Mahmoud Osman

 $\mathcal{M}.\mathcal{B}.~\mathcal{B}.\mathcal{CH}$

Faculty of Medicine -Ain Shams University (2011)

Under Supervision of

Prof. Karam Mohamed Bayoumy

Professor of Obstetrics & Gynecology Faculty of Medicine - Ain Shams University

Dr. Mohamed Mahmoud Abd El Aleem

Lecturer of Obstetrics & Gynecology Faculty of Medicine - Ain Shams University



Faculty of Medicine Ain Shams University 2016





سورة البقرة الآية: ٣٢





First of all, I thank **ALLAH** for blessing this work as a part of his generous help throughout my life.

I would like to acknowledge my deepest gratitude and appreciation to Karam Mohamed Bayoumy, Professor of Obstetrics & Gynecology, Faculty of Medicine, Ain Shams University, for his support and encouragement.

I would like to express my sincere gratitude and deepest thanks to Mohamed Mahmoud Abd El Aleem, Lecturer of Obstetrics & Gynecology, Faculty of Medicine, Ain Shams University, for suggesting and planning this work, and for his meticulous supervision, scientific support and judicious guidance throughout this work.

Last but not least, I would like to thank my family for their support.

Galal Alden Mokhtar



Contents

List of Abbreviations	I
List of Tables	III
List of Figures	V
Introduction	1
Aim of the Study	5
Review of Literature	
• Chapter (1): Polycystic Ovary Syndrome	6
• Chapter (2): Induction of Ovulation	34
Chapter (3): Doppler Ultrasound	48
Patients and Methods	61
Results	69
Discussion	92
Summary	98
Conclusion and Recommendations	101
References	102
Arabic Summary	

List of Abbreviations

Abb.	Description
ACTH	Adrenocorticotrophic hormone
AE-PCOS Society	Androgen Excess-PCOS Society
AFC	Antral follicle cohort
BMI	Body mass index
CAH	Congenital adrenal hyperplasia
CC	Clomiphene citrate
CO_2	Carbon dioxide
CW	Continous wave
CYP	Cytochrome P-450
DHEAS	Dehydroepiandrosterone Sulfate
DHEA-S	Dehydroepiandrosterone-sulfate
FDA	Food and Drug Administration
FG	Ferriman-Gallwey
FOH	Functional ovarian hyperandrogenism
FSH	Follicle stimulating hormone
GnRH	Gonadotropin-releasing hormone
hCG	Human chorionic gonadotropin
HDL-C	High-density lipoprotein cholesterol
hMG	Human menopausal gonadotropin
HPA	Hypothalamic-pituitary-adrenal
НРО	Hypothalamic-pituitary-ovarian

Abb.	Description
HP-uFSH	Highly purified urinary FSH
IOA	Intraovarian arteries
IUI	Intrauterine insemination
LH	Luteinizing hormone
NIH	National Institute of Health
NOTES	Natural office transluminal endoscopic surgery
OHSS	Ovarian Hyperstimulation Syndrome
PCOS	Polycystic ovary syndrome
PI	Pulsatility index
PW	Pulsed Wave
RI	Resistance index
SD	Standard deviation
SHBG	Sex hormone-binding globulin
SOGC	Society of Obstetricians and Gynaecologists of Canada
SPSS	Statistical Program for Social Science
THL	Transvaginal hydrolaparoscopy
THLOD	Transvaginal hydrolaparoscopic ovarian drilling
TMX	Tamoxifen
TSH	Thyroid stimulating hormone
WHO	World Health Organisation
YAG	Yttrim-aluminium-garnet

List of Tables

Table	Title	Page
1	Definition of PCOS according to available criteria	8
2	Clinical signs and symptoms associated with PCOS	17
3	Phenotypes for PCOS based on 2003 Rotterdam criteria	18
4	Consider the following in the differential diagnosis of PCOS	23
5	Ferriman-Gallwey (FG) scores	63
6	Comparison between ovulation and not ovulated as regard ovarian artery resistant index and pulsitility index	70
7	Comparison between ovulation and not ovulated as regard uterine artery resistant index and pulsitility index	72
8	Comparison between pregnancy and non pregnancy as regard ovarian artery resistant index and pulsitility index	74
9	Comparison between pregnancy and non pregnancy as regard uterine artery resistant index and pulsitility index	76
10	Comparison between pregnancy and non- pregnancy as regard demographic data	78

Table	Title	Page
11	Comparison between ovulation and non ovulation as regard parity	80
12	Comparison between pregnancy and non pregnancy as regard parity	81
13	Comparison between ovulation and non-ovulation as regard menstrual cycle	82
14	Comparison between pregnancy and non pregnancy as regard menstrual cycle	84
15	Comparison between ovulation and non-ovulation as regard ultrasound	85
16	Comparison between pregnancy and non pregnancy as regard ultrasound	87
17	Comparison between ovulation and not ovulated as regard biochemical hyperandrogenism	88
18	Comparison between pregnancy and non pregnancy as regard biochemical hyperandrogenism	90

List of Figures

Figure	Title	Page
1	Detailed pathophysiology of PCOS	15
2	Polycystic ovaries by gynecologic ultrasound	22
3	Laparotomy wedge resection in PCO	30
4	Laparoscopic drilling in PCO	31
5	Laser fiber for ovarian drilling	32
6	Procedure for transvaginal hydrolaparoscopic	
	(THL) and transvaginal hydrolaparoscopic	33
	ovarian drilling (THLOD) (THLOD) The	33
	procedure for THL and THLOD are described	
7	Structure of CC	36
8	Ferriman-Gallwey (FG) scores	64
9	Comparison between ovulation and not ovulated	
	as regard ovarian artery resistant index and	71
	pulsitility index	
10	Comparison between ovulation and not ovulated	
	as regard uterine artery resistant index and	73
	pulsitility index	
11	Comparison between pregnancy and non	
	pregnancy as regard ovarian artery resistant index	75
	and pulsitility index	
12	Comparison between pregnancy and non	
	pregnancy as regard uterine artery resistant index	77
	and pulsitility index	

Figure	Title	Page
13	Bar chart between pregnancy and no pregnancy as regard BMI	79
14	Comparison between ovulation and non ovulation as regard parity	80
15	Bar chart between pregnancy and no pregnancy as regard parity	81
16	Comparison between ovulation and non- ovulation as regard menstrual cycle	83
17	Bar chart between pregnancy and no pregnancy as regard menstrual cycle	84
18	Comparison between ovulation and non-ovulation as regard ultrasound	86
19	Comparison between pregnancy and non pregnancy as regard ultrasound	87
20	Comparison between ovulation and not ovulated as regard biochemical hyperandrogenism	89
21	Comparison between pregnancy and non pregnancy as regard biochemical hyperandrogenism	91



Introduction





Aim of the Study





Chapter (1)

Polycystic Ovary Syndrome





Chapter (2)

Induction of Ovulation





Chapter (3)

Doppler Ultrasound

