

# Evaluation of Liver Function and Lipid Metabolism in Norplant Users

Thesis

Submitted for partial fulfillment of  
Master Degree in Obstetrics and Gynecology

Presented by

**Amr Taher Hasen Abdel Hady**

M. B., B. Ch. - Ain Shams University (1992)

618.178  
A. T

Supervised by

**Prof. Dr. Aly Elyan Khalaf Allah**

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



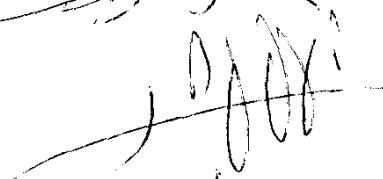

64280

**Dr. Mohamed Ashraf Mohamed Farouk Kortam**

Ass. Prof. of Obstetrics and Gynecology  
Faculty of medicine - Ain Shams University.

Department of Obstetrics and Gynecology  
Faculty of Medicine - Ain Shams University

CAIRO - 1997

  
  
  
  
Abdel K. ...  
M. El H. ...





بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ﴾

صدق الله العظيم  
سورة البقرة [ الآية : ٣٢ ]



## **ACKNOWLEDGEMENT**

With grateful gratitude, I feel always indebted to Allah, the kind and merciful.

I wish to offer my sincere gratitude and utmost thanks to Prof. **Dr. Aly Eltan Khalaf Allah**, Professor of Obstetrics and Gynecology, Faculty of Medicine, Ain Shams University, for his kind supervision, continuous encouragement and unlimited help in conducting and revising this work and my deep indebtedness to him are far shorter than his rights.

I'm also very grateful to **Dr. Mohamed Ashraf Mohamed Farouk Kortam**, Ass. Prof of Obstetric and Gynecology, Faculty of Medicine, Ain Shams University for his support valuable advice and continuous encouragement, really his vast experience in supervising such work offered me a great deal of confidence.

I wish to express my deep thanks and gratitude to **Dr. Susan Said Abd El - Wahab**, Fellow doctor of Clinical Pathology for her great help in performing the practical part of this work.

Finally, my thanks to all candidats shared in this study.



## **LIST OF ABBREVIATIONS**

- ALP : Alkaline phosphatase.
- AS : Atherosclerosis.
- ASVD : Atherosclerotic vascular disease.
- CHD : Coronary heart disease.
- DBP : Diastolic blood pressure.
- DMPA : Depot medroxy progesterone acetate.
- HDL- c : High density lipoprotein - cholesterol.
- IDL - c : Intermediate density lipoprotein - cholesterol.
- IUD : Intrauterine device.
- LCAT : Lecithin cholesterol acyl transferase.
- LDL - c : Low density lipoprotein-cholesterol.
- LFTs : Liver function tests.
- LNG : Levonorgestrel.
- mRNA : Messenger ribonucleic acid.
- NET-EN : Norethindrone enanthate.
- SBP : Systolic blood pressure.
- SGOT : Serum glutamic oxaloacetic transaminase.
- SGPT : Serum glutamic pyruvic transaminase
- SHBG : Sex hormone binding globulin.
- Tc : Total cholesterol.
- VLDL- c : Very low density lipoprotein cholesterol.
- WHO : World Health Organization.
- :



## **LIST OF TABLES**

	<b><u>PAGE</u></b>
<b>* <u>Tables in review of literature:</u></b>	
(1) Tests of hepatic function.	6
(2) Causes of elevated plasma transaminases activity.	12
(3) Causes of an increase in plasma alkaline phosphatase activity.	17
(4) Classification properties and composition of human serum lipoproteins.	27
(5) Types of subdermal implants.	55
<b>* <u>Tables in Results:</u></b>	
(1) Comparison of weights in the cases before and six months after insertion of Norplant.	89
(2) Comparison of blood pressure levels before and six months after Norplant insertion.	91
(3) Comparison of serum protein levels before and six months after Norplant insertion.	93
(4) Comparison of bilirubin levels before and six months after Norplant insertion.	95
(5) Comparison of transaminases level before and six months after Norplant insertion.	97
(6) Comparison of alkaline Phosphatase levels before and six months after Norplant insertion.	99
(7) Comparison of plasma lipids level before and six months after Norplant insertion.	101

	<u>PAGE</u>
(8) Comparison of total cholesterol/ high density lipoprotein - cholesterol (Tc/ HDL - c) ratio before and six months after Norplant insertion.	103
(9) Comparison of low density lipoprotein-cholesterol/ high density lipoprotein-cholesterol (LDL - c/ HDL - c) ratio before and six months after Norplant insertion.	105
(10) Comparison of high density lipoprotein - cholesterol / total cholesterol minus high density lipoprotein - cholesterol (HDL - c/ Tc - HDL - c) ratio before and six months after Norplant insertion.	107
(11) Correlation between diastolic blood pressure (DBP) and total cholesterol (Tc) before Norplant insertion.	109
(12) Correlation between diastolic blood pressure (DBP) and total cholesterol (Tc) six months after Norplant insertion.	109
(13) Correlation between diastolic blood pressure (DBP) and high density lipoproteins - cholesterol (HDL - c) before Norplant insertion.	111
(14) Correlation between diastolic blood pressure (DBP) and high density lipoproteins - cholesterol (HDL - c) six months after Norplant insertion.	111
(15) Correlation between diastolic blood pressure (DBP) and low density lipoproteins - cholesterol (LDL - C) before Norplant insertion.	113
(16) Correlation between diastolic blood pressure (DBP) and low density lipoproteins - cholesterol (LDL - c) six months after Norplant insertion.	113

## **LIST OF FIGURES**

<b><u>FIGURES IN REVIEW</u></b>	<b><u>PAGE</u></b>
(1) Generalized structure of a plasma lipoprotein.	26
(2) Lipoprotein systems for transporting lipids in humans.	26
(3) Progestins structurally related to testosterone.	42
(4) Progestins structurally related to progesterone.	45
(5) The new progestins.	47
(6) Sterile package, set of 6 implants and a trocar for insertion.	71
(7) Insertion of Norplant implants (fan shaped manner).	72
(8) Removal of Norplant implants.	73
(9) The removed Norplant implant.	74
<b><u>Figures in Results:</u></b>	
(1) Comparison of weights before and 6 months after insertion of Norplant.	88
(2) Comparison of systolic and diastolic blood pressures before and six months after insertion of Norplant.	90
(3) Comparison of serum protein levels before and six months after insertion of Norplant.	92
(4) Comparison of bilirubin before and six months after insertion of Norplant.	94
(5) Comparison of transaminases level before and six months after insertion of Norplant.	96

	<u>PAGE</u>
(6) Comparison of alkaline phosphatase (ALP) before and six months after insertion of Norplant.	98
(7) Comparison of plasma lipids before and six months after insertion of Norplant.	100
(8) Comparison of total cholesterol / high density lipoprotein - cholesterol (Tc/ HDL - c) before and six months after insertion of Norplant.	102
(9) Comparison of low density lipoprotein - cholesterol/ high density lipoprotein - cholesterol (LDL- c / HDL - C) before and six months after insertion of Norplant.	104
(10) Comparison of high density lipoprotein - cholesterol/ total cholesterol minus high density lipoprotein - cholesterol (HDL - c/ Tc - HDL - c) before and six months after insertion of Norplant.	106
(11) Correlation between diastolic blood pressure and total cholesterol before and after six months of Norplant insertion.	108
(12) Correlation between diastolic blood pressure and high density lipoprotein - cholesterol before and after six months of Norplant insertion.	110
(13) Correlation between diastolic blood pressure and high density lipoprotein - cholesterol before and after six months of Norplant insertion.	112



## **CONTENTS**

• Introduction .	1
• Aim of work.	3
• Review of literature.	4
Chapter (1): Liver function tests.	4
Chapter (2): Plasma lipids and lipoproteins.	21
Chapter (3): Progestins and progestin-only con- traceptives.	41
Chapter (4): Norplant implants.	57
• Subjects and Methods.	75
• Results.	87
• Discussion.	114
• Summary and Conclusion.	125
• References.	128
• Arabic Sumary.	--

