Assessment of Gonadotropins and Androgens among Pubertal Overweight and Obese Girls

Thesis
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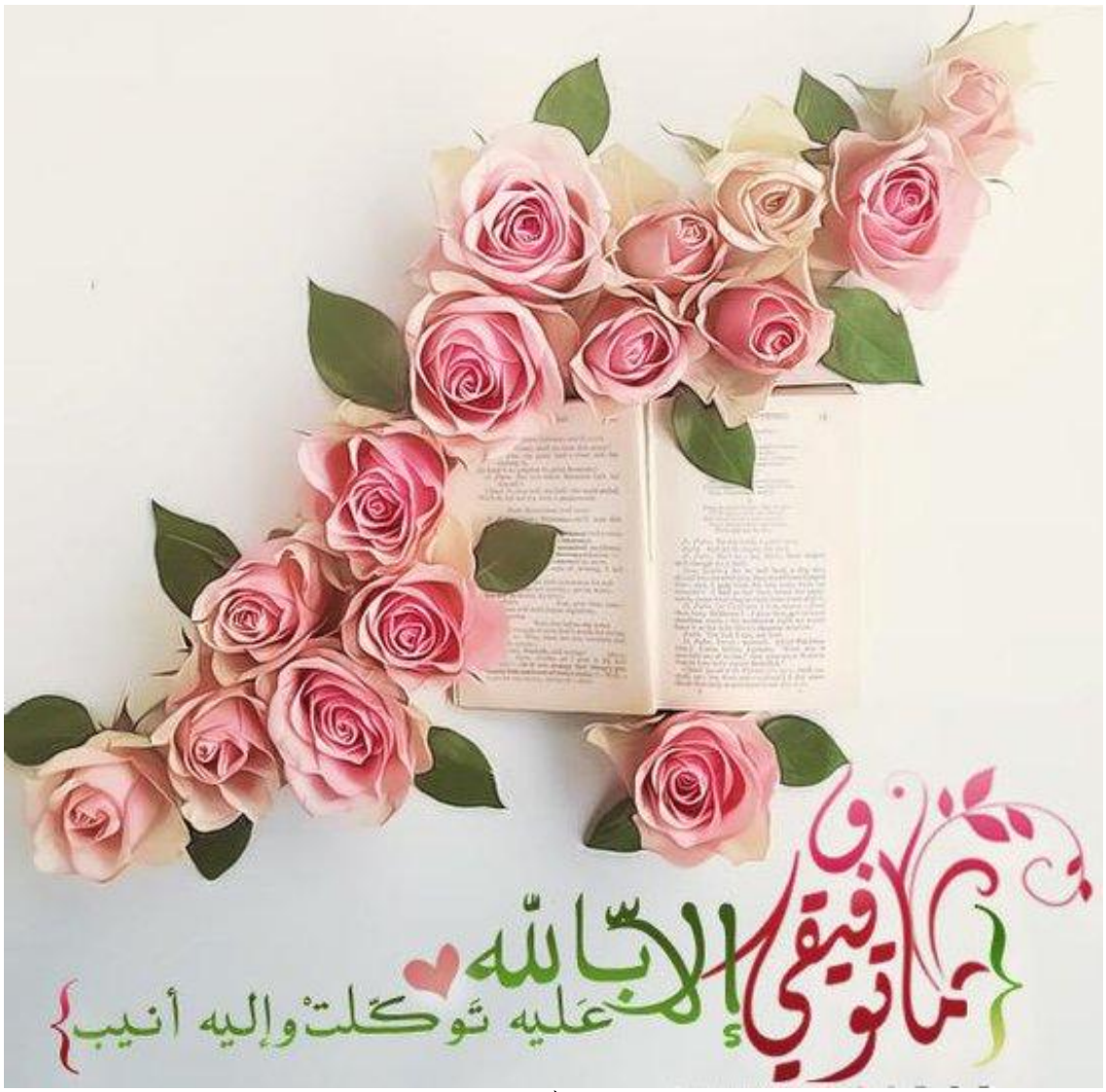
بسم الله الرحمن الرحيم



صدق الله العظيم

(هود: 88)

Dedication

TO

the sole of my father
may God mercy him,
my mother, my wife
and my daughters
(Farida & Laila)
who are really
behind me

Mahmoud Affy

Acknowledgment

First, grace and foremost thanks to ***Allah*** *for blessing this work until it has reached its end, as a part of his generous help throughout our life.*

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Table of contents

List of Abbreviations

ACTH	***Adreno corticotrophic hormone***
AgRP	***Agouti-related protein***
α-MSH	***Alpha melanocyte stimulating hormone***
ANOVA	***Analysis of variance***
ARC	***Arcuate***
BIA	***Bio-impedance analysis***
BMI	***Body mass index***
BP	***Blood preasure***
CART	***Cocaine and amphetamine-regulated transcript***
CIMT	***Carotid intima media thickness***
CNS	***Central nervous system***
CT	***Computed tomography***
CVD	***Cardio vascular diseases***
DBP	***Diastolic blood Pressure***
DEXA	***Dual-energy x-ray absorpiometry***
DHEA	***Dehydro epiandrosterone***
DHEAS	***Dehydro epiandrosterone sulfate***
DHT	***Dihydro testosterone***
DM	***Diabetes mellitus***
DMN	***Dorsomedial nuclei***

DNA	***Deoxyribonucleic acid***
E2	***Estradiol***
EDCs	***Endocrine-disrupting chemicals***
EIA	***Enzyme Immunoassay***
ELISA	***Enzyme-linked immunosorbent assay***
FBG	***Fasting blood glucose***
FSH	***Follicle stimulating hormone***
GERD	***Gastroesophageal reflux disease***
GH	***Growth hormone***
GnRH	***Gonadotrophin releasing hormone***
GSK3	***Glycogen synthase kinase-3***
HC	***Hip circumference***
HDL	***High density lipoprotein***
HDL-C	***High-density lipoprotein cholesterol***
HOMA	***Homeostatic model assessment***
HPT	***Hypothalamo-pituitary-thyroid***
Ht	***Height***
I.B.P	***International Biological Program***
IGF	***Insulin Like growth factor***
IGF1	***Insulin Like growth factor one***

IGF-BP3	***Insulin like growth factor binding protein 3***
IL-1	***Interleukin 1***
IL-6	***Interleukin 6***
iNOS	***Inducible nitric oxide synthase***
IR	***Insulin resistance***
IRS	***Insulin resistance substrates***
JIS	***Joint Interim Statement***
LDL	***Low density lipoprotein***
LH	***Luteinizing hormone***
MC	***Melanocortin***
MC3-R	***Melanocortin 3 receptors***
MC4-R	***Melanocortin 4 receptors***
MRI	***Magnetic resonance imaging***
mRNA	***Messenger Ribonucleic acid***
MS	***Metabolic syndrome***
mTOR	***Mammalian target of rapamycin***
n	***Sample size***
NAFLD	***Non alcoholic fatty liver disease***
NC	***Neck circumference***
NPY	***Neuropeptide Y***
NTS	***Nucleus of the tractus solitarius***

PC1	***Prohormone convertase 1***
PC2	***Prohormone convertase 2***
PCOS	***Polycystic ovary syndrome***
PI3K	***Phosphoinositide-3 kinase***
PMV	***The ventral premammillary nucleus of the hypothalamus***
POMC	***Proopiomelanocortin***
PSU	***Pilosebaceous unit***
PVN	***Paraveutricular nucleus***
SBP	***Systolic blood Pressure***
SCFE	***Slipped capital femoral epiphysis***
SHBG	***Sex hormone binding globulin***
SSBG	***Sex steroid binding globulin***
TC	***Total cholesterol***
TG	***Triglycerides***
TNF	***Tumor necrosis factor***
TRH	***Thyrotropin releasing hormone***
US	***Ultrasound***
VLDL	***Very low density lipoprotein***
VMN	***Ventromedial nuclei***
WC	***Waist circumference***
WHR	***Waist to hip ratio***

List of Tables

List of Figures

Assessment of Gonadotropins and Androgens among Pubertal Overweight and Obese Girls

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Abstract:

Background: Previous studies have suggested an association between adiposity, androgens and gonadotropins in late pubertal girls. ***Aim:*** Assessment the levels of gonadotropins and androgens among pubertal overweight and obese girls. ***Subjects and Methods:*** It was a cross-sectional one, carried out in the Obesity Clinic of the Diabetes, Endocrine and Metabolism Pediatric Unit (DEMPU), Pediatric Hospital, Cairo University and "Management of Visceral Obesity and Growth Disturbances Unit" at the "Medical Research Excellence Center (MERC)", National Research Centre. It included 40 overweight and obese girls and 40 age-matching normal weight (control) girls, aged 12 -18 years. Anthropometric assessment (weight, height, hip and waist circumferences) was recorded, BMI and waist/hip were calculated. Laboratory investigations: serum gonadotropins (LH, FSH) and androgens (total and free testosterone) were measured. ***Results:*** hypogonadotropism (FSH and LH) and hyperandrogenaemia (total and free testosterone) were significantly prominent among obese girls. Correlation between gonadotropins (FSH and LH), androgens (total testosterone and free testosterone) and all the studied variables for the 3 groups under study (control, overweight and obese) revealed constant relations. Gonadotropins and androgens had opposing correlations. Gonadotropins had significant ***negativ***e correlations, and androgens had significant ***positiv***e correlations with the anthropometric obesity markers defined as BMI, Waist C, and W/H ratio. In addition, gonadotropins and androgens had insignificant correlation with age.