Biochemical study of some hormonal changes in polycystic ovarian patients

Thesis

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By

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Abstract

Biochemical study of some hormonal changes in polycystic ovarian patients

Gehan Abd El-Wahab Moustafa Khodear

This study aimed to determine the potential usefulness of serum melatonin (Mel), urinary ٦-sulfatoxymelatonin (aMT٦s), serum thyroid stimulating hormone (TSH), serum follicle stimulating hormone (FSH), serum luteinizing hormone (LH), serum prolactin (PRL), serum estradiol (E٢), serum progesterone, serum sex hormone binding globulin (SHBG), serum free testosterone and serum dehydroepiandrosterone sulfate (DHEAS) as diagnostic and/ or prognostic markers in women with polycystic ovary syndrome (PCOS). This study included ٣٠ women with PCOS, ١٥ perimenopausal women, ١٥ postmenopausal women and ٣٠ healthy women. Mel, aMT٦s and SHBG were determined by enzyme linked immunosorbent assay (ELISA), free testosterone and DHEAS were measured by radioimmunoassay technique (RIA) while TSH, FSH, LH, PRL, E٢ and progesterone were measured by chemiluminescent immunoassay. Our results showed that the mean values of Mel night (N), Mel day (D), aMT٦s, FSH, LH, free testosterone, PRL and TSH were significantly increased while SHBG, E٢ and progesterone were significantly decreased in PCOS as compared with controls. The mean values of FSH, LH and free testosterone were significantly increased while the mean values of MEL- N, aMT٦s, DHEAS, SHBG, E٢ and progesterone were significantly decreased in perimenopausal and postmenopausal women as compared with controls. PRL and TSH were significantly increased in postmenopausal women while Mel-D was significantly decreased in postmenopausal women as compared with controls. Mel-N, Mel-D, aMT٦s, progesterone, free testosterone, TSH, LH, PRL and DHEAS were significantly increased while FSH and PRL significantly decreased in PCOS as compared with perimenopause women. MEL-N, MEL-D, aMT٦s, progesterone, SHBG, E٢ and DHEAS were significantly increased while FSH and LH significantly decreased in PCOS as compared with postmenopausal women. Mel-D, E٢, progesterone, SHBG and DHEAS were significantly increased while free testosterone, TSH, PRL, FSH, LH were significantly decreased in perimenopausal women as compared with postmenopausal

women. In conclusion, Mel could become an important medication for improving ovarian function in perimenopausal and postmenopausal women. Increased Mel production in women with PCOS might be due to increased levels of gonadotropins (FSH, LH) and free testosterone.

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List of abbreviations

A	Androstenedione
ACTH	Adrenocorticotropic hormone
AGA	Androgenic alopecia
aMT٦s	٦-sulfatoxymelatonin
ANOVA	Analysis of variance
B٠	Mean count of ٠
%B	Mean sample count
BMI	Body mass index
CBT	Core body temperature
CHD	Chronic heart disease
CL	Corpus luteum
CPM	Count per minute
DHEA	Dehydroepiandrosterone
DHEAS	Dehydroepiandrosterone sulfate
DHT	Dihydrotestosterone
Diane ٣٥	Cyproterone acetate ethinyl estradiol
DM	Diabetes mellitus
dSPZ	Dorsal sub paraventrricular zone
DPP	Diabetes Prevention Program
ELISA	Enzyme linked immunosorbent assay
E٢	Estradiol
ERs	Estrogen receptors
FF	Follicular fluid
FMP	Final menstrual period
FP	Follicular phase
FSH	Follicle stimulating hormone
FSHR	Follicle stimulating hormone receptors
GC	Granulosa cells
GnRH	Gonadotropin releasing hormone
HDL	High density lipoprotein
HRP	Horseradish peroxidase
HRT	Hormone replacement therapy
IBL	Immuno Biological Laboratories
I^{١٢٥}	Iodine ١٢٥
IDDM	Insulin dependent diabetes mellitus
IH	Idiopathic hirsutism
LDL	Low-density lipoprotein
LH	Luteinizing hormone
LHR	Luteinizing hormone receptors
LHRH	Luteinizing releasing hormone
LP	Luteal phase
LP'	Light phase
MB	Maximum binding

MDD	Major depressive disorder
Mel	Melatonin
Mel-D	Melatonin-Day
Mel-N	Melatonin-Night
MelT١	Melatonin transmembrane ١
MelT٢	Melatonin transmembrane ٢
MelT٣	Melatonin transmembrane ٣
NAS	N-acetylserotonin
NIDM	Noninsulin dependent diabetes mellitus
NO	Nitric oxide
NSB	Nonspecific binding
OD	Optical density
Ox-LDL	Oxidized low-density lipoprotein
PCOM	Polycystic ovarian morphology
PCOS	Polycystic ovary syndrome
PCR	Polymerase chain reaction
PEPCK	Phosphoenolpyruvate carboxykinase
PMT	Photo multipli phase enzyme linked immunosorbent assay tube
***P*NPP**	*P*-nitrophenyl phosphate
POAH	Peroptic anterior hypothalamus
POF	Premature ovarian failure
PRL	Prolactin
PVN	Paraventricular nucleus
PVT	Paraventricular nucleus of the thalamus
QR١	Quinone reductase ١
QR٢	Quinone reductase ٢
REM	Rapid-eye-movement
RIA	Radioimmunoassay
SAH	Subarachnoid hemorrhage
SCN	Suprachiasmatic nucleus
SD	Standard deviation
SHBG	Sex hormone binding globulin
SOL	Sleep onset latency
T	Total counts
TMB	Tetramethylbenzidine
TRH	Thyrotropin releasing hormone
T٣	Triiodothyronine
T٤	Tetraiodothyronine
TSH	Thyroid stimulating hormone
UVA	Ultraviolet-A
UVB	Ultraviolet-B
VMSs	Vasomotor symptoms

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