Serum Leptin level in women with polycystic ovarian syndrome in relation to BMI and hormonal profile.

Thesis

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By

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Contents

List of Abbreviations

5α-R	5α-reductase
17-HSD	17-hydroxysteroid dehydrogenase
A	Androstenodione
ACTH	Adrenocorticotropic hormone
AgRP	Agouti-related protein
AIDS	Acquired immune deficiency syndrome
ASRM	American Society for Reproductive Medicine
ATP	Adenosine triphosphate
BMI	Body mass index
cAMP	Cyclic adenosine monophosphate
CD_3	Complement D3
CVD	Cardiovascular disease
DOC	Deoxycorticosterone
DHEAS	Dehydroepiandrosteron Sulphate
DHT	Dihydrotestosterone
E2	Estradiol
ELISA	Enzyme-Linked Immuno Sorbent Assay
ESHRE	European Society of Human Reproduction and Embryology
FDA	Food and drug administration
FFAs	Free Fatty Acids
Flu	Flutamide
FSH	Follicle stimulating hormone
GDM	Gestational Diabetes
GH	growth hormone
GnRH	Gonadotropin-Releasing Hormone
HDL	High density lipoprotein
HMG	Human menopausal gonadotropin
HRP	horseradish peroxidase complex
HS	Highly significant
HSD	Hydroxysteroid dehydrogenase

IGF I	Insulin Growth Factor 1
IGF-II	Insulin Growth Factor 2
IGFBP	Insulin Growth Factor Binding Protein
IGT	Impaired glucose tolerance
IL-6ST	Interleukin -6 signal transducer gp130
IL	Interleukin
IFN-γ	Interferon Gamma
IR	Insulin resistance
IRS	Insulin receptor substrate
IVF	In Vitro Fertilization
LDL	Low density lipo-protein
LH	Luteinizing hormone
LOD	Laparoscopic Ovarian Drilling
JAK	Janus kinases
N	Number
NICHD	National Institute of Child Health and Human Development
NIH	National Institutes of Health
NPY	Neuropeptide Y
NS	Non significant
Ob	Obesity
OB-R	Leptin receptor
OCs	Oral contraceptives
OHSS	Ovarian hyperstimulation syndrome
P450arom	Aromatase enzyme
PAI-1	Plasminogen-activator inhibitor type 1
PCOS	Polycystic ovarian syndrome
POMC	Pro-opiomelanocortin
PPARγ	Peroxisome proliferatoractivated receptor-γ
ROC	Receiver- operator characteristic
S	Significant

SCC	Side-chain cleavage enzyme
SD	Standard Deviation
SHBG	Sex Hormone- Binding Globulin
SK	Sulfokinase
SL	Sulfolyase
TNFα	Tumor Necrosis Factor-α
SORBS1	Human sorbin and SH3domain-containing 1
StAR	Steroidogenic acute regulatory protein
STAT	signal transducers and activators of transcription
TZD	Thiazolidinedione
UL	Uterine leiomyomata
US	Ultrasound
VLCD	Very low calorie diets
VNTR	Variable number tandem repeats
W/H	Waist-to-hip ratio

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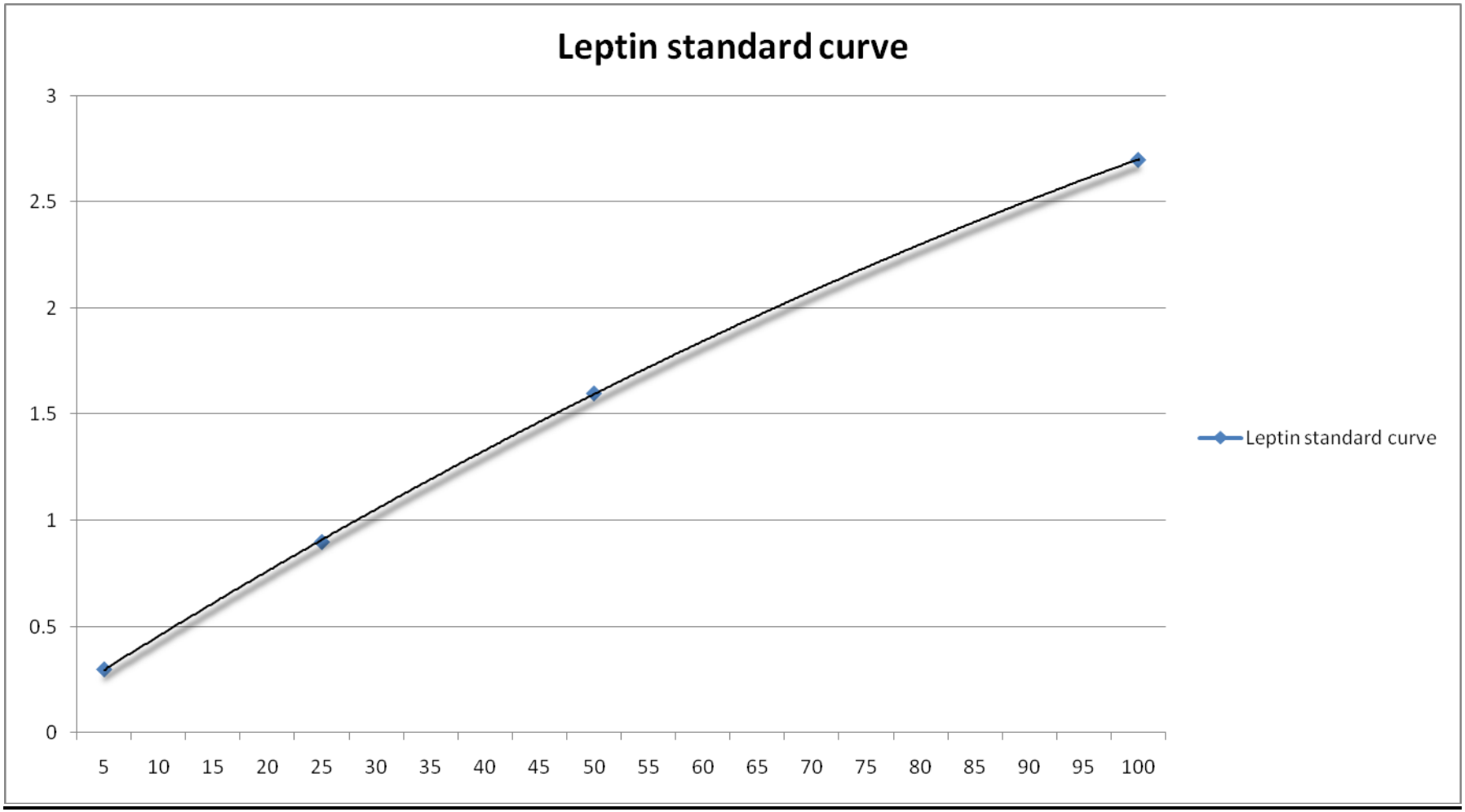
Appendix

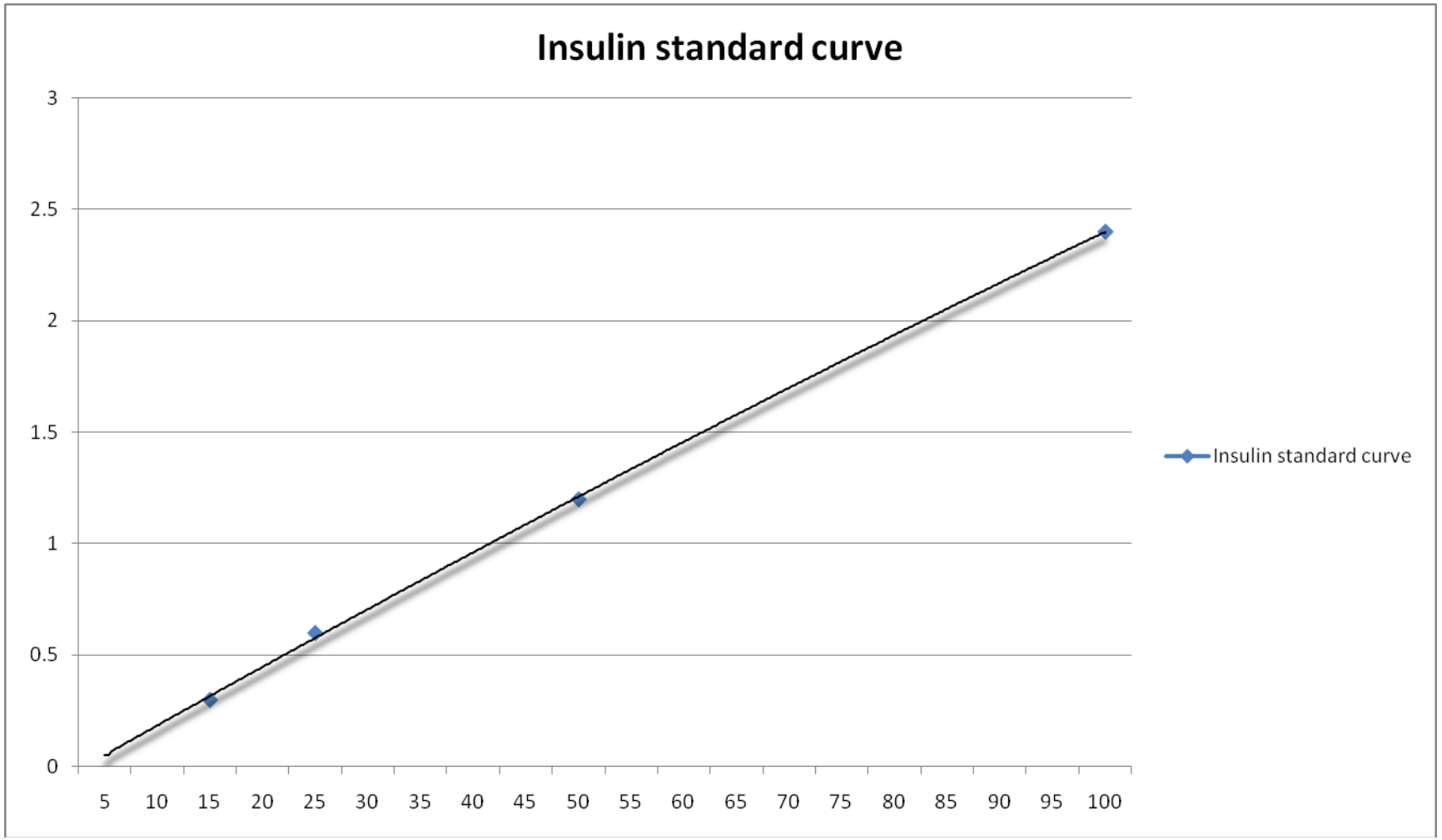
GROUP (1): cases of PCOS:

Serial	Name	Age	Age of menarche	Parity	Period of infertility in years	BMI	waste/hip ratio	Glucose	Insulin	Leptin	Testosterone	FSH	LH
1	A.M.A.	20	12	1	2	23.8	0.75	120	15	10	4.5	3	7.5
2	H.H.S.	22	12	0	3	30.8	0.8	100	30	13	5	3	6
3	N.M.A.	22	13	1	2	23.4	0.76	160	10	22	6	4	7
4	N.A.A.	23	12	2	4	31.1	0.81	95	15	15	6.5	2	7.5
5	M.S.F.	28	11	0	6	30.9	0.8	110	40	10	7	2.5	6
6	W.H.M.	29	14	1	5	23.4	0.75	105	65	8	5	2	6.5
7	S.A.R.	30	12	0	6	36.9	0.88	85	50	10	6	3.5	8
8	R.G.L.	21	10	0	2	25.4	0.75	110	30	12	4	3	9
9	E.H.A.	29	11	1	5	25	0.76	122	15	14	5	3	9.5
10	F.E.H.	22	12	0	3	26.6	0.77	141	10	16	4	3	10
11	H.M.M.	28	11	0	5	29.2	0.8	104	15	22	5	4	9
12	N.H.A.	25	12	0	4	29.6	0.81	100	22	20	6	2.5	7.5
13	H.S.E	30	13	2	8	22.7	0.74	96	10	13	5	3	8
14	A.A.M.	32	10	0	9	29.2	0.79	88	8	10	4	2	6.5
15	N.A.M.	32	11	1	7	39	0.86	104	10	14	7	2.5	8
16	A.A.E.	23	12	2	2	29.1	0.79	110	15	30	6	3	9
17	S.A.E.	29	11	0	5	38.7	0.83	112	20	25	4	3	8.5
18	R.S.M.	23	11	0	2	34.2	0.82	132	15	20	6	2.5	6
19	Z.E.M.	23	12	0	2	34.8	0.83	110	10	14	4	2	6.5
20	N.E.M.	21	13	0	2	26.7	0.78	97	20	10	5	2.5	7

GROUP (2): control group:

serial	name	Age	Age of menarche	parity	BMI	W/H ratio	Glucose	Insulin	Leptin	Testosterone	FSH	LH
1	N.A.E	21	11	2	22.2	0.94	95	10	12	1.5	5.5	5
2	S.H.A	23	13	1	23.4	0.92	100	15	8	1.8	6	5.5
3	S.A.A.	26	12	3	25.5	0.82	65	8	4	2	7	7
4	G.M.F.	30	11	5	23.4	0.91	110	12	10	2	6.5	5
5	F.M.A.	26	13	2	22	0.81	105	35	6	2.5	7	6
6	A.T.M.	23	12	1	30.2	0.78	122	10	13	1.5	5.5	5
7	A.A.S.	30	11	4	22.5	0.9	100	12	10	1.7	6	7
8	M.M.H.	28	13	2	30	0,87	86	10	8	1.5	5.5	6
9	A.M.T.	22	11	1	33	0.84	93	15	12	1.8	6	6.5
10	S.R.H.	29	12	3	27.1	0.76	102	10	9	2	4	4
11	G.M.D.	21	12	1	34	0.99	110	14	11	2.5	4.5	4.5
12	S.M.A.	30	13	4	28	0.94	90	8	10	1.5	6	5
13	H.S.E.	24	14	2	32.2	0.83	122	10	14	1.6	6.5	6
14	A.Z.A	30	14	4	36.2	0.88	88	6	10	2	7	6.5
15	S.T.A.	33	12	5	23.6	0.94	102	12	13	2.5	7.5	7
16	A.I.H.	26	14	4	30.5	0.85	93	10	16	2	6	5.5
17	B.M.S	22	11	2	28.2	0.94	100	8	12	1.5	6.5	6
18	E.A.E.	34	11	3	32.9	0.88	112	12	14	1.5	7	7
19	N.F.B.	30	12	2	35.1	0.98	86	15	10	2	6	5.5
20	M.M.A	28	13	3	30.3	0.78	102	20	8	2.5	7	6


Leptin standard curve
3
2.5
2
1.5
1
0.5
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Leptin standard curve


Insulin standard curve
3
2.5
2
1.5
1
0.5
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Insulin standard curve

Aim of the work

Is to find the correlation between Serum Leptin level in women with polycystic ovarian syndrome in relation to their BMI and other hormonal profile (testosterone, FSH, LH and insulin).

Introduction

In 1935 Stein & Leventhal described seven women presenting with oligomenorrhea combined with the presence of bilateral polycystic ovaries (PCO) established during surgery **(Stein, Leventhal., 1935).**

Polycystic ovary syndrome in its most typical form (the association of hyperandrogenism and chronic anovulation) is one of the most common endocrine disorders, it is estimated to affect >5% of the female population. (**Franks et al., 2008)** Recognising adolescents at risk for PCOS and taking the appropriate steps to reduce circulating androgen levels is critical in reducing the clinical symptomatology of this disorder, and the development of adulthood infertility, diabetes, and metabolic syndrome in patients with PCOS. **(Shayya et al, 2010).**

The clinical and biochemical features are heterogeneous, and there has been much debate as to whether it represents a single disorder or several. In recent years, it has become apparent that the polycystic ovary syndrome not only is the most frequent cause of anovulation and of hirsutism, but is also associated with a characteristic metabolic disturbance (resistance to the action of insulin) that may have important implications for long-term health (**Franks, 1995**).

PCOS is also associated with a metabolic disturbance, central to which is peripheral insulin resistance and compensatory hyperinsulinaemia **(Dunaif, 1997);(Ehrmann, 2005).** These metabolic