



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Association between Polycystic Ovary Syndrome and Elevated Serum Periostin Levels

A Thesis

Submitted for partial fulfillment of Master degree
in Obstetrics & Gynecology

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سببناك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

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List of Abbreviations

<i>Abbr.</i>	<i>Full-term</i>
AE-PCOS Society	: Androgen excess and polycystic ovary syndrome society
AES	: Androgen Excess Society
AFC	: Antral follicle count
AMH	: Anti mullerian hormone
ASNs	: Androgen- secreting neoplasms
BMI	: Body mass index
BMP	: Bone morphogenetic protein
CAH	: Congenital adrenal hyperplasia
CYP11A	: Cytochrome P450 side-chain cleavage enzyme
CYP17	: Cytochrome P450 17-hydroxylase/17
CYP21	: Cytochrome P450 21-hydroxylase
DBP	: Diastolic blood pressure
ECM	: Extracellular matrix
EEC	: Endometrial epithelial cells
ELISA	: Enzyme Linked Immune Sorbent Assay
EMT	: Epithelial-mesenchymal transition
ESC	: Endometrial stromal cells
FAI	: Free androgen index
FAK	: Focal adhesion kinase
FBG	: Fasting blood glucose
FNPO	: Follicle number per ovary
FSH	: Follicle-stimulating hormone
FUN	: Uterine fundal myometrium
GH	: Growth hormone
HDL-C	: High density lipoprotein-Cholesterol
HOMA-IR	: Homeostasis model assessment of insulin resistance
hs-CRP	: High-sensitive C reactive protein

IGF-1	: Insulin-like growth factor 1
IGT	: Impaired glucose tolerance
IH	: Idiopathic hirsutism
IHC	: Immunohistochemical
IQR	: Interquartile range
ISI	: Insulin sensitivity index
iTRAQ	: Isobaric tagged-based quantitative mass spectrometry
LAP	: Lipid accumulation index
LDL-C	: Low density lipoprotein-Cholesterol
LH	: Luteinizing hormone
LPA	: Lysophosphatidic acid
LUS	: Lower uterine segment
NC-CAH	: Non classical congenital adrenal hyperplasia
NIH	: National Institutes of Health
OC	: Ovarian cancer
OGTT	: Oral glucose tolerance test
OS	: Overall survival
OV	: Ovarian volume
PCOm	: Polycystic ovarian morphology
PCOS	: Polycystic ovary syndrome
Periostin	: Postin
PFS	: Progression-free survival
SBP	: Systolic blood pressure
SHBG	: sex hormone-binding globulin
SHBG	: Sex hormone-binding globulin
SPSS	: Statistical package for Social Science
TCF21	: transcription factor 21
TG	: Triglycerides
WB	: Western blotting
WHR	: Waist to hip ratio

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Abstract

Background: Polycystic ovary syndrome (PCOS) is the most common endocrinopathy affecting reproductive aged women and it is the most common cause of anovulatory infertility. The diagnosis of PCOS in women is usually done according to the ESRHE/ASRM criteria known as Rotterdam criteria. Periostin is a 90-kilodalton secretory protein originally identified as an osteoblast-specific factor and functions as a cell adhesion molecule. PCOS is associated with elevated levels of periostin but it was not clear whether increased periostin levels are primary activators or they simply resulted from the disorder.

Aim of the work: The aim of the study was to assess the periostin levels in patients with PCOS to measure the ability of this factor for diagnosis of the syndrome.

Subjects and Methods: This Cross sectional study included 40 patients suspected to have PCOS according to the ESRHE/ASRM criteria known as Rotterdam. Ultrasound investigation was done and total cholesterol, high density lipoprotein-Cholesterol (HDL-C), low density lipoprotein (LDL-C), FSH, LH, estradiol, uric acid, oral glucose tolerance test (OGTT) and serum periostin levels were investigated by using ELISA technique.

Results: PCO patients had higher levels of triglycerides, uric acid and periostin levels compared to non PCO group.

Conclusion: Polycystic ovary syndrome is associated with elevated serum periostin levels.

Key words: Periostin, ELISA, PCOS.

Introduction

Polycystic ovary syndrome (PCOS) is a multifactorial disorder and different genetic, hormonal, and environmental etiology can contribute to its pathology **(De Leo et al., 2016)**. Polycystic ovary syndrome (PCOS) is the most common endocrinopathy affecting reproductive aged women, with a prevalence of between 8% and 13% depending on the population studied and definitions used. PCOS is a complex disease with reproductive, metabolic and psychological features. Infertility is a prevalent presenting feature of PCOS with ~75% of these women suffering infertility due to anovulation, making PCOS by far the most common cause of anovulatory infertility **(Costello et al., 2019)**.

The diagnosis of PCOS in women is usually done according to the ESRHE/ASRM criteria known as Rotterdam criteria, which is based on having at least two of three characteristics of oligo-ovulation/anovulation, hyperandrogenism and polycyclic ovaries using ultrasonographic images. According to Androgen Excess Society (AES) criteria, clinical or biochemical diagnosis of hyperandrogenism is required simultaneously with an oligo-ovulation/anovulation, or ultrasound images of polycyclic ovaries **(Shaaban et al., 2019)**.

Polycystic ovary syndrome (PCOS) is a heterogeneous entity and is characterized not only by reproductive disturbances, such as anovulatory infertility and pregnancy complications but also by increased risk of disorders of glucose metabolism and increased markers of cardiovascular morbidity. Hyper-androgenism and insulin resistance are characteristic features of the syndrome, and compensatory hyperinsulinaemia, that accompanies insulin resistance, augments androgen production **(Ollila et al., 2017)**.

Periostin is a 90-kilodalton secretory protein originally identified as an osteoblast-specific factor that is preferentially expressed in the periosteum and functions as a cell adhesion molecule **(Liu et al., 2017)**.

The ability of periostin to interact with extracellular matrix (ECM) components and cell-surface receptors renders the protein capable to modulate both the biomechanical properties of connective tissues and the cell-matrix interactions, thus regulating important processes like cell adhesion, migration, proliferation, and differentiation **(Prakoura and Chatziantoniou, 2017)**.

Periostin performs an important function in numerous biological processes, including bone development, maturation and remodeling, cardiovascular differentiation, cutaneous and connective tissue remodeling, as well as in allergic diseases, respiratory diseases and various inflammatory conditions **(Kang et al., 2019)**.