بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Assessment of Serum Fibroblast Growth Factor 21 as a Risk Factor for the Occurrence of Cardiometabolic Disorders among Psoriatic Patients

Thesis

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in **Dermatology, Venereology and Andrology**

By

Noora Nasser Mohamed Salama
M.B.B.,Ch.
Faculty of Medicine, Ain Shams University

Under Supervision of

Dr. Maha Adel Shaheen
Professor of Dermatology, Venereology and Andrology
Faculty of Medicine, Ain Shams University

Dr. Ahmed Abd Elfattah Afify
Lecturer of Dermatology, Venereology and Andrology
Faculty of Medicine, Ain Shams University

Dr. Walid Abdelhady Ahmed
Lecturer of Clinical Pathology
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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List of Abbreviations

Abb.	Full term
6p21	*Chromosome 6*
AICAR	*Aminoimidazole-4-carboxamide ribonuleotide*
AMP	*Anti-microbial peptides*
AP-1	*Activator protein-1*
APCs	*Antigen-presenting cells*
BMI	*Body mass index*
BSA	*Body surface area*
C/EBP	*CCAAT enhancer-binding protein*
CD2	*Cluster of differentiation 2*
cDCs	*Dermal conventional DCs*
CRP	*C reactive protein*
CVD	*Cardiovascular disease*
DCs	*Dentritic cells*
DLQI	*Dermatology Life Quality Index*
DM	*Diabetes mellitus*
FGF	*Fibroblast growth factor*
FGFRs	*FGF receptors*
HDL-c	*High-density lipoprotein cholesterol*
HIV	*Human Immunodifficiency Virus*
HLA	*Human leucocyte antigens*
IBD	*Inflammatory bowel diseases*
ICAM-1	*Intercellular adhesion molecule -1*
iDCs	*Inflammatory DCs*
IFN	*Interferon*
IFNα	*Interferone α*
IGA	*Investigator's Global Assessment*
IL	*Interleukin*
KGF	*Keratinocyte growth factor*
LCs	*Langerhans cells*
LDL-c	*Low-density lipoprotein cholesterol*
LFA	*Lymphocyte functional antigen*
MACE	*Major adverse cardiovascular events*

List of Abbreviations cont...

Abb.	Full term
HPA	*Hypothalamic–pituitary–adrenal*
mDC	*Myeloid dendritic cells*
MED	*Minimal erythema dose*
mLCs	*Monocyte-derived LCs*
MS	*Metabolic syndrome*
NAFLD	*Nonalcoholic fatty liver disease*
NF-AT	*Nuclear factor of activated T cell*
NGF	*Nerve growth factor*
NSAIDs	*Non-Steroid Anti Inflammatory Drugs*
PASI	*Psoriasis Area and Severity Index*
pDCs	*Plasmacytoid DCs*
PPP	*Psoriasis pustulosa palmoplantaris*
PUVA	*Psoralen Ultraviolet A*
rLCs	*Resident LCs*
ROS	*Reactive oxygen species*
SD	*Standard deviation*
SPSS	*Statistical Package for Social Science*
T2D	*Type 2 diabetes*
TCR	*T cell receptor*
TG	*Triglyceride*
TLRs	*Toll like receptors*
TNF α	*Tumor necrosis factor-α*
Treg	*T regulatory*
UV	*Ultra violet*
UVB	*Ultraviolet B*
VEGF	*Vascular endothelial growth factor*
VIP	*Vasoactive intestinal peptide*
VPF	*Vascular permeability factor*

INTRODUCTION

Psoriasis is a common and chronic inflammatory skin disease whose exact pathogenesis remains uncertain. In recent years, research focuses not only on understanding the genesis of skin lesions but especially on the explanation of systemic disorders associated with psoriasis ***(Lockshin et al., 2018).***

Elevated risk of the occurrence of chronic inflammatory diseases in psoriatic patients, such as inflammatory bowel diseases (IBD), nonalcoholic fatty liver disease (NAFLD), diabetes mellitus (DM), obesity, or metabolic syndrome (MS) has been proven in various studies ***(Alsfyani et al., 2010).***

Additionally, for years, psoriasis has been associated with an increased risk of atherosclerosis and its consequences, such as cardiovascular disease (CVD) or stroke ***(Prodanovich et al., 2009).***

Chronic inflammation is a well-established factor linking both cutaneous manifestation of the disease and the increased coexistence of the above mentioned cardiometabolic disorders ***(Boehncke et al., 2011).***

Understanding the connection between the inflammatory state, psoriasis progression and severity, as well as the cardiometabolic dysfunction leads to more research for new markers of inflammation that would provide a tool for early

diagnosis and discovery of new therapeutic methods for the systemic complications ***(Kiluk et al., 2019).***

The use of fibroblast growth factor, namely (FGF-21) considered as a promising approach to assess the risk and diagnose the presence of psoriasis-related cardiometabolic abnormalities ***(Woo et al., 2013).***

Circulating FGF-21 concentrations exhibit a characteristic diurnal rhythm in humans and dysregulation of the FGF-21 circadian rhythm correlates with obesity-induced lipid disorders ***(Yu et al., 2011).***

Similarly, serum FGF-21 is increased in several CVDs (coronary heart disease, atherosclerosis, myocardial ischemia, and cardiac hypertrophy), so serum FGF-21 levels might be regarded as a potential biomarker for CVDs as well as for metabolic disorders ***(Gimeno and Moller, 2014).***

It has been suggested that combining FGF-21 measurement with other lipid profile parameters including body mass index (BMI), serum triglycerides (TG) and cholesterol levels, may represent a reasonable perspective for the prediction of these metabolic diseases. Since an FGF-21 assay is simple and noninvasive, it may be a promising test for population-based screening for the aforementioned diseases, or for identifying those who are at high risk ***(Xie and Leungue, 2017).***

In a report presented by ***Kiluk et al., (2019),*** they demonstrate for the first time elevated serum FGF-21 concentration in psoriasis patients compared to healthy controls. This leads to question if psoriasis can also be considered as a state of metaflammation and if FGF-21 could be novel biomarker of psoriasis or progression of its comorbidities.

Aim of the Work

The aim of the present work is to evaluate the serum level of FGF-21 in psoriatic patients versus healthy controls and to correlate it with the disease severity (PASI Score), BMI and other metabolic parameters.