

ASSESSMENT OF METABOLIC SYNDROME IN PATIENTS WITH CHRONIC URTICARIA

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْحَكِيمُ

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List of Abbreviations

AACE	American Association of Clinical Endocrinology
ACE	Angiotensin converting enzyme
ADN	Adiponectin
APST	Autologous Plasma Skin Test
ASST	Autologous Serum Skin Test
BMI	Body Mass Index
CD	Cluster of Differentiation
CIU	Chronic Idiopathic Urticaria
CMS	Cardiac Metabolic Syndrome
CNS	Central Nervous System
COPD	Chronic Obstructive Pulmonary Disease
CSU	Chronic Spontaneous Urticaria
CU	Chronic Urticaria
CVD	Cardiovascular Disease
DBP	Diastolic Blood Pressure
DM2	Diabetes Mellitus Type 2
DPU	Delayed Pressure Urticaria
EAACI	European Academy of Allergology and Clinical Immunology
ECP	Eosinophil Cationic Protein
EDF	European Dermatology Forum
EGIR	European Group for the Study of Insulin Resistance
ESR	Erythrocyte Sedimentation Rate
FBG	Fasting Blood Glucose
FcεRI	High-Affinity Receptor for IgE

List of Abbreviations

FFA	Free Fatty Acids
G6PD	Glucose-6 Phosphate Dehydrogenase
GA2LEN	Global Allergy and Asthma European Network
GM-CSF	Granulocyte Macrophage Colony Stimulating Factor
HDL	High Density Lipoprotein
HDL-C	High Density Lipoprotein-Cholesterol
HPA	Hypothalamic Pituitary Axis
ID	Intra Dermal
IDF	International Diabetes Federation
IFG	Impaired Fasting Glucose
IgG	Immunoglobulin G
IGT	Impaired Glucose Tolerance
IR	Insulin Resistance
IRS	Insulin Receptor Substrate
LDL	Low Density Lipoproteins
LTRA	Leukotriene Receptor Antagonists
MBP	Major Basic Protein
MEP	Mediterranean Food Pattern
Met S	Metabolic Syndrome
MMP-9	Matrix Metalloproteinase -9
Nampt	Nicotinamide Phosphoribosyl Transferase
NASH	Nonalcoholic Steatohepatitis
NCEP ATP II	National Cholesterol Education Program Adult Treatment Program III
NSAID	Non-Steroidal Anti-Inflammatory Drugs
OGTT	Oral Glucose Tolerance Test

List of Abbreviations

PAF	Platelet Activating Factor
PAI-1	Plasminogen Activator Inhibitor
PCOS	Polycystic Ovarian Syndrome
PG2	Prostaglandin ₂
PUVA	Phototherapy with UV Light
S IgE	Serum Immunoglobulin E
SBP	Systolic Blood Pressure
SCH	Subclinical Hypothyroidism
SD	Standard Deviation
SNS	Sensory Nervous System
TC	Total Cholesterol
TG	Triglycerides
TNF	Tumor Necrosis Factor
UVB	Ultraviolet B
UVR	Ultraviolet Rays
VAF	Visceral Abdominal Fat
VLDL	Very Low Density Lipoproteins
VTE	Venous Thromboembolism
WAO	World Allergy Organization
WHO	World Health Organization

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Abstract

A systemic pro-inflammatory and pro-coagulating state occurs in subjects who have both chronic urticaria and metabolic syndrome. To investigate the prevalence and clinical impact of metabolic syndrome in Egyptian patients with chronic urticaria, a case control study was performed included 160 subjects. Metabolic syndrome was assessed by the WHO criteria. Twenty one patients (26.25%) had metabolic syndrome compared to 11.25% in matched controls group ($p=.015$). metabolic syndrome was higher in chronic urticaria patients with long disease duration. There was a statistical significant difference as regard body mass index, serum triglyceride, high density lipoprotein, fasting blood glucose level and blood pressure. In this study metabolic syndrome was higher in chronic urticaria patients with negative autologous serum skin tests compared with those without metabolic syndrome. Also metabolic syndrome was higher in chronic urticaria with angioedema in comparison with those without angioedema.

We conclude from this study that, patients with severe and uncontrolled chronic urticaria, especially those with high body mass index should be evaluated for metabolic syndrome in order to reduce cardiovascular risk and improve chronic urticaria outcomes.

INTRODUCTION

Chronic urticaria is a common skin disorder defined by persistent or recurrent wheals and pruritus of at least 6 weeks duration. The wheals are thought to be due to activation of cutaneous mast cells, which release various of inflammatory mediators including histamine, proteases, leukotrienes and tumor necrosis factor (*Kaplan et al., 2009*). Life time prevalence of chronic urticaria is 0.5% in general population (*Sagi et al., 2011*).

The cardinal clinical features of urticaria that distinguish it from any other types of inflammatory eruption are the repeated occurrence of short-lived cutaneous wheals accompanied by redness and itching (*Kaplan, 2002*). It occurs most commonly in women and has a peak age of onset between 20 and 40 years (*Sussman et al., 2015*).

Diagnosis is based on questioning and clinical examination to rule out differential diagnosis, few diagnostic tests are necessary for diagnosis and management (*Soria and Frances, 2014*).

The treatment options are primary prevention in the form of avoidance of aggravating factors, counseling, anti-histamines, leukotrienes, receptor antagonists, prednisolone, sulphasalazine and immunosuppressives (*Godse, 2009*).

Chronic urticaria and metabolic syndrome share chronic low grade inflammation, involving TNF alpha, ECP and C3, they may be mutually triggered or exacerbated (*Ye et al. 2013*). Metabolic syndrome is characterized by increased levels of inflammatory marker such as IL-1, IL-6. TNF and CRP (*Devaraj et al., 2004*).

Association between metabolic syndrome and inflammatory diseases for examples: psoriasis, systemic lupus erythematosus and rheumatoid arthritis, have been reported (*Love, 2011*).

Metabolic syndrome is a complex disorder with high socioeconomic cost that is considered a worldwide epidemic, Metabolic syndromes is defined by a cluster of interconnected factors that directly increase the risk of coronary heart disease (CHD), other forms of cardiovascular atherosclerotic diseases (CVD) and diabetes mellitus type 2 (DMT2) (*Kassi et al., 2011*). Recently the National Cholesterol Education Programs Adult Treatment Panel 111 report (ATP 111) identified six components of metabolic syndrome that related to CVD: abdominal obesity, atherogenic dyslipidemia, raised blood pressure, insulin resistance+/-, glucose intolerance, proinflammatory and prothrombotic states.