RELATION OF HYPERURICEMIA AND DIABETIC NEPHROPATHY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

Thesis

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Marwa Elshafai

Abstract

Background: The pathogenesis of diabetic nephropathy is complex and still not fully elucidated. Epidemiological studies report a relationship between serum uric acid concentrations and chronic kidney disease.

Aim: To study the relation between hyperuricemia and diabetic nephropathy in type 2 diabetes mellitus. The relation of hyperuricemia with other microvascular complications and components of metabolic syndrome was studied as well.

Methods: The study included 50 patients with type 2 diabetes, 33 patients with metabolic syndrome and17 patients without metabolic syndrome**.** Serum uric acid, Serum creatinine, Creatinine clearance, A/C ratio, urine analysis, FBG and Lipid profile. Fundus examination abdominal ultrasound were done to all patients.

Results: Serum uric acid showed significant positive correlation with the degree of albuminuria, and creatinine level and diabetic retinopathy. Also there is a strong association between uric acid and the metabolic syndrome and its components.

Conclusion: Elevated uric acid may be a risk factor for development of metabolic syndrome. Uric acid may play a role in development and progression of diabetic nephropathy and retinopathy.

Keywords:

1- Serum uric acid- **2- Type 2 diabetes mellitus**

3-metabolic syndrome **4- diabetic Nephropathy**

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List Of Abbreviations

NASH	**nonalcoholic steatohepatitis**
ESRD	**End-stage renal disease**
GFR	**glomerular filtration rate**
IDDM	**Insulin dependent diabetes mellitus**
UKPDS	**United Kingdom prospective diabetes study**
CVD	**cardiovascular diseases**
AGEs	**Advanced glycosylation end products**
mRNA	**Messenger ribonucleic acid**
IGF-1	**Insulin-like growth factor-1**
DCCT	**Diabetes control and complications trial**
DNA	**Deoxyribonucleic acid**
RRT	**renal replacement therapy**
UAE	**urinary albumin excretion**
ACE-I	**angiotensin-converting enzyme inhibitor**
MDRD	**Modified Diet in Renal Disease**
HOT	**Hypertension Optimal Treatment study**
ARBs	**angiotensin II receptor blockers**
HOPE	**Heart Outcomes Prevention Evaluation Study**
DCCT	**Diabetes control and complications trial**
DNA	**Deoxyribonucleic acid**
RAS	**Renin Angiotensin System**
COOPERATE	**Combination Treatment of Angiotensin-II Receptor Blocker and Angiotensin-Converting-Enzyme Inhibitor in Nondiabetic Renal Disease**
DOQI	**Dialysis Outcome Qualitative Initiative**

BP	**blood pressure**
LDL	**Low density lipoprotein**
HDL	**High density lipoprotein**
Hb A1c	**Haemoglobin A1c**
DM	**Diabetes mellitus**
BED	**binge eating disorder**
NHLBI	**National Heart, Lung, and Blood Institute**
AHA	**American Heart Association**
ECG	**Electrocardiography**
SPECT	**Stress single-photon emission computed tomography**
BMI	**body mass index**
PAI-1	**plasminogen activator inhibitor-1**
TSH	**thyroid stimulating hormone**
ACC	**American College of Cardiology**
ASCVD	**atherosclerotic cardiovascular disease**
CPAP	**continuous positive airway pressure**
CETP	**Cholesteryl ester transfer protein inhibitors**
HMG-CoA	**Hydroxyl-methyl-gluteryl co-enzyme A**
AHA-ASA	**American Heart Association-American Stroke Association**
DASH	**Dietary Approaches to Stop Hypertension**
PPAR-gamma	**peroxisome proliferator-activated receptor-gamma**
URAT1	**A urate/anion exchanger**
hOAT1	**human organic anion transporter 1**
UAT	**urate transporter**
HGPRT	**hypoxanthine guanine phosphoribosyltransferase**
PRPP	**phospho-alpha-d-ribosyl pyrophosphate**
IL-1	**interleukin 1**

ATP	Adenosine triphosphate
NALP3	NACHT, LRR and PYD domains-containing protein 3
HFI	Hereditary fructose intolerance
NSAIDs	nonsteroidal anti-inflammatory drugs
FDA	US Food and Drug Administration
PMN	Polymorphonuclear leukocytosis
CT	computed tomography
GIP	glucose-dependent insulinotropic polypeptide
GLP-1	glucagonlike peptide-1
SNPs	single-nucleotide polymorphisms
GIPR	gastric inhibitory polypeptide
HMGA1	The high mobility group A1 protein
IFG	impaired fasting glucose
NPH	neutral protamine Hagedorn
IGT	impaired glucose tolerance
TCF7L2	transcription factor 7–like 2 gene.
MODY	maturity onset diabetes of youth
CDC	Centers for Disease Control and Prevention
DKA	Diabetic ketoacidosis
HNS	Hyperosmolar nonketotic state
ED	emergency department
LADA	latent autoimmune diabetes of the adult
post-OGTT	post-oral glucose tolerance test
ADA	American Diabetes Association
NGSP	National Glycohemoglobin Standardization Program
WHO	The World Health Organization
HbF	fetal hemoglobin

Anti-GAD65 antibodies	65-kd isoform of glutamic acid decarboxylase
IA2	Islet-cell
CHD	coronary heart disease
SMBG	self-monitoring of blood glucose
ACCORD	Action to Control Cardiovascular Risk in Diabetes study
AACE	American Association of Clinical Endocrinologists
DPP-4	Dipeptidyl peptidase IV Inhibitors
TZD	Thiazolidinediones
GLP-1	Glucagonlike peptide–1 (GLP-1) agonists
MEN 2	multiple endocrine neoplasia syndrome type 2
GHb	glycated hemoglobin
ACP	American College of Physicians
ASCOT	Anglo-Scandinavian Cardiac Outcomes Trial
DIGAMI	Diabetes and Insulin-Glucose Infusion in Acute Myocardial Infarction
SGLT-2	Selective sodium-glucose transporter
G6PD	glucose 6-phosphate dehydrogenase
ATP III	Adult Treatment Panel III
NAFLD	Nonalcoholic fatty liver disease
eGDR	estimated glucose disposal rate
SBP	Systolic blood pressur
A/C ratio	Albumin creatinine ratio
DBP	Diastolic blood pressure
TGs	triglyceride
FBG	fasting blood glucose
ICAM	inflammatory cells mediated by a reduction in ICAM

IHD	**ischemic heart disease**
NCEP	**National Cholesterol Education Program**

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