Lipid Profile In Systemic Lupus Erythematosus Patients And Its Correlation With Disease Activity Parameters

Thesis

Submitted for partial fulfillment of master degree in Rheumatology and Rehabilitation.

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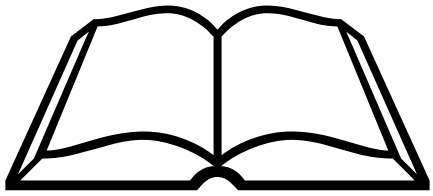

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LIST OF ABBREVIATIONS

ACR	**:**	American College of Rheumatology
ALAs	**:**	Antilymphocyte antibodies
ALP	**:**	Alkaline phosphatase
ALT	**:**	Alanine amino transferase
ANA	**:**	Anti nuclear antibody
ANOVA	**:**	Analysis of variance
Anti-DNA	**:**	Anti-deoxyribonucleic acid
Anti-Sm	**:**	Anti-Smith
Anti-U1 RNP	**:**	Anti uridine1 ribonucleic protein
Apo-	**:**	Apoprotein
AS	**:**	Ankylosing spondylitis
AST	**:**	Aspartate amino transferase
β2 GP I	**:**	Beta 2 glycoprotein 1
C3	**:**	Complement factor 3
CAC	**:**	Coronary artery calcification
CAD	**:**	Coronary artery disease
CBC	**:**	Complete blood count
CCA	**:**	Common carotid artery
CFA	**:**	Common femoral artery
CHD	**:**	Coronary heart disease
CNS	**:**	Central nervous system
CrCl	**:**	Creatinine clearance

CRP	**:**	C reactive protein
CVA	**:**	Cerebrovascular accident
DIP	**:**	Distal interphalyngeal joint
dl	**:**	Deciliter
ds DNA	**:**	Double stranded deoxyribonucleic acid
EBCT	**:**	Electron beam computed tomography
ECG	**:**	Electrocardiography
ESR	**:**	Erythrocyte sedimentation rate
HDL-c	**:**	High density lipoprotein cholesterol
HLA	**:**	Human leucocytic antigen
HMG-Co A	**:**	3-hydroxy-3-methyl-glutaryl-coenzyme A
HPF	**:**	High power field
HSP	**:**	Heat shock proteins
IDL	**:**	Intermediate density lipoprotein
Ids	**:**	Idiotypes
IFN-gamma	**:**	Interferon gamma
Ig	**:**	Immunoglobulin
IL	**:**	Interleukin
LCAT	**:**	Lecithin cholesterol acyltransferase
LDL	**:**	Low density lipoprotein
LPL	**:**	Lipoprotein lipase
MCP	**:**	Metacarpo-phalyngeal joint
MCP-1	**:**	Monocyte chemoattractant protein 1
MHC	**:**	Major histocompatibility complex

M-IMT	**:**	Maximum intima-media thickness
MTP	**:**	Metatarso-phalyngeal joint
NCEP	**:**	National Cholesterol Education Program
NK	**:**	Natural killer
NO	**:**	Nitric oxide
oxLDL	**:**	Oxidized low density lipoprotein
PBMCs	**:**	Peripheral blood mononuclear cells
PIP	**:**	Proximal inter-phalyngeal joint
PLT	**:**	Platelet
RA	**:**	Rheumatoid arthritis
RBC	**:**	Red blood cell
RIND	**:**	Reversible ischemic neurologic deficit
RNA	**:**	Ribonucleic acid
SCLE	**:**	Subacute cutaneous lupus erythematosus
SD	**:**	Standard deviation
SLAM	**:**	Systemic Lupus Activity Measure
SLE	**:**	Systemic lupus erythematosus
SLEDAI	**:**	Systemic Lupus Erythematosus Disease Activity Index
SLICC	**:**	Systemic Lupus International Collaborating Clinics
SPECT	**:**	Single photon emission computed tomography
SPSS	**:**	Statistical Package for Social Sciences
TBA	**:**	Total body surface area
TG	**:**	Triglycerides

TGF-β	**:**	Transforming growth factor β
TIA	**:**	Transient ischemic attacks
TLR	**:**	Toll-like receptors
TNF	**:**	Tumor necrosis factor
TTP	**:**	Thrombotic thrombocytopenic purpura
U-B	**:**	Ultrasonic biopsy
UV	**:**	Ultra violet
VDRL	**:**	Venereal Disease Research Laboratories
VLDL	**:**	Very low density lipoprotein
WBCs	**:**	White blood cells
WHO	**:**	World Health Organization
yrs	**:**	Years

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ABSTRACT

Objective: To study the lipid profile in systemic lupus erythematosus (SLE) patients and to correlate it with various disease activity parameters.

Patients and methods: 48 female SLE patients fulfilling the updated ACR 1997 revised criteria for classification of SLE were subjected to:

Full history taking, clinical examination and routine laboratory tests to assess SLE including: Complete blood count, erythrocyte sedimentation rate, liver function tests, kidney function tests, complement components, complete urine analysis and fasting lipid profile. Total cholesterol (TC) and triglycerides (TG) were measured in plasma by the calometric method. High density lipid cholesterol (HDL-C) was measured using direct HDL method (Hitachi 917). Low density lipid cholesterol (LDL-C) and very low density lipid cholesterol (VLDL) were calculated using formulas LDL-C= TC – (TG/2.2+ HDL-C) and VLDL= TG × 0.45. Systolic and diastolic blood pressures were measured.

Results: Hypercholesterolemia (>200mg/dl) was present in 23 patients (47.9%). Lupus nephritis was detected in 38 patients (79.1%), hematological disorders were found in 33 patients (68.75%), joint affection in 27 patients (56.3%), muco-cutaneous lesions in 25 patients (52%), hypertension in 24 patients (50%), respiratory affection and Raynauds' in 15 patients each (31.3%) and cardiovascular affection in 6 patients (12.5%). Systemic lupus activity measure (SLAM) index correlated significantly with TG (r=0.295, p=0.041) and with VLDL (r=0.296, p=0.041) respectively. A significant negative correlation was found between SLAM and C3 level (r=-0.403, p=0.004) and between SLAM and administration of antimalarial drugs (r=-0.0297, p=0.041).

HDL-C was negatively correlated with the SLAM score, however, the correlation did not reach statistical significance (r=-0.079, p=0.598). Correlation of the lipid profile with C3, C4, ESR and platelet levels did not reach statistical significance.

Conclusion: Disease activity correlated with elevated TG and VLDL levels. An oral steroid dose of ≤ 10 mg/d was associated with a lower lipid profile than that of patients not receiving any steroids. On increasing the dose to > 10 mg/d all the lipid components showed an increase which was statistically insignificant. Patients not receiving antimalarial drugs showed higher plasma lipid levels than those receiving the drug. There was a further decrease in TG, VLDL and HDL-C levels on increasing the antimalarial dose from 200mg/d to 400 mg/d. However, the difference in plasma lipid levels between the two doses did not reach statistical significance.

Keywords: SLE, hyperlipidemia, coronary artery disease.

CONTENTS

INTRODUCTION

Systemic lupus erythematosus (SLE) is a prototypic autoimmune disease characterized by the production of antibodies to components of the cell nucleus in association with a diverse array of clinical manifestations **(Boumpas et al., 1995)**.

Hyperlipidemia is common in systemic lupus erythematosus (SLE), the prevalence being estimated to be more than 50%. Hyperlipidemia has been shown to be an important predisposing factor for atherosclerosis in SLE **(Petri et al., 1992).**

Although lipid levels fluctuate in lupus patients, in a study by Bruce and his colleagues in 1999, 75% of lupus patients developed hyperlipidemia, which was sustained in 40% of patients for 3 years after diagnosis. Coronary artery disease (CAD) occurred more frequently in patients with sustained hypercholesterolemia than those with intermittent or no hypercholesterolemia **(Bruce et al., 1999).**

Women with systemic lupus erythematosus (SLE) have a 7-50-fold increased risk of coronary artery disease **(McMahon et al., 2006).** Therefore, routine lipid monitoring is essential **(Tam et al., 2000).**

Since premature CAD is a significant cause of mortality and morbidity in SLE, modification of hypercholesterolemia would be expected to help reduce the risk of future CAD events in SLE **(Bruce et al., 1999)**.

In SLE, however, many factors that significantly influence cholesterol levels including disease activity, proteinuria, and steroid therapy will vary greatly over time. It is therefore quite likely that in some patients with SLE, cholesterol levels may "normalize" due to changes in disease and therapy related factors, independent of specific lipid lowering strategies being implemented **(Bruce et al., 1999).**

Knowledge of the "natural history" of hypercholesterolemia in SLE would be of benefit in better informing physicians of the risks that a particular patient carries and therefore whether patients are likely to require long-term therapy with specific lipid lowering drugs (**Bruce et al., 1999)**.

Aim of work

The aim of this work is to study the lipid profile in SLE patients and to correlate it with various disease activity parameters.