The Impact of Metabolic Syndrome on A Cohort of Egyptian Rheumatoid Arthritis Patients

Thesis

Submitted for Partial Fulfillment of Master Degree in Internal Medicine

Presented by

Aly Moustafa Abd-el-samie

M.B., B.Ch

Under supervision of

Prof.Dr.Amina Badr Eldin Abdelaziz

Professor of Internal Medicine and Rhuematology Faculty of Medicine- Ain-Shams University

Prof.Dr.Samah Abd El Rahman Elbakry

Professor of Internal Medicine and Rhuematology Faculty of Medicine- Ain-Shams University

Dr. Caroline Samy Morad

Lecturer of Internal Medicine and Rhuematology Faculty of Medicine- Ain-Shams University

> Faculty of Medicine Ain Shams University 2017

Acknowledgement

First, I feel always indebted to **Allah**, the Most Kind and the Most Merciful.

I would like also to express my deep appreciation and gratitude to **Prof. Dr./ Amina Badr Eldin Abdelaziz,**Professor of Internal Medicine, Faculty of Medicine – Ain Shams University, for her unlimited help, great efforts and time she has devoted to accomplish this work. I really have the honor to complete this work under her supervision.

I am deeply grateful to **Prof. Dr./ Samah Abd El Rahman Elbakry,** Professor of Internal Medicine, Faculty of
Medicine – Ain Shams University, for her unlimited help and
giving me the privilege to work under her supervision. Her care
and support are really valuable and precious.

I would like also to express my deep appreciation and gratitude to **Dr./Caroline Samy Morad**, Lecturer of Internal Medicine of Internal Medicine, Faculty of Medicine – Ain Shams University, for her care and support, also for the efforts and time she has devoted to accomplish this work.

Finally, I wish to extend my thanks to my Family for their care and support.





List of Contents

Title	Page No.
List of Tables	5
List of Figures	9
List of Abbreviations	15
Introduction	1
Aim of the Work	20
Review of Literature	
Rheumatoid Arthritis	21
Metabolic Syndrome	65
■ The Relation Between Metabolic Syndrome Rheumatoid Arthritis	
Patients and Methods	103
Results	110
Discussion	181
Summary	192
Conclusion	195
Recommendations	196
References	197
Arabic summary	

List of Tables

Table No.	Title	Page No.
Table (1):	The 2010 ACR/EULAR classif	
Table (2):	Reference for biological DMARDs	s62
Table (3):	Recommendations on Indication	ons for
	the Use of Biologic Disease-Mo	
	Antirheumatic Drugs in Patient	
Trailer (4).	RA	
Table (4):	WHO, EGIR, and ATPIII definit	
Table (5):	the metabolic syndrome World Metabolic Metabol	
Table (b).	Definition	
Table (6):	Ethnic Specific Values for	
14510 (0).	Circumference: International D	
	Federation Consensus World	
	Definition of Metabolic Syndrome	e71
Table (7):	Drugs with US Food and	
	Administration-Approved Ind	lication
	for Obesity	83
Table (8-a):	Clinical descriptive data in group	A111
Table (8-b):	Clinical descriptive data in group	o A95
Table (9):	Laboratory descriptive data in gr	oup A113
Table (10):	Radiologically descriptive data in	-
	A	
Table (11):	Drug history in group A	
Table (12-a):	Clinically descriptive data in gro	-
Table (12-b):	Clinically descriptive data in gro	-
Table (13):	Laboratory descriptive data in gr	-
Table (14):	Radiologically descriptive data in	· -
Table (15):	B Drug history in group B	

List of Tables cont...

Table No.	Title	Page No.
Table (16):	Comparison between group A (RA with MetS) and group B (RA without MetS) regarding and duration of disease	patients sex, age
Table (17):	Comparison between group A (with MetS) and group B (without MetS) reanthropometry.	patients patients egarding
Table (18):	Comparison between group A(with MetS) and group B (without MetS) as regarding I	patients patients Diabetic,
Table (19):	Hypertension, Family history Comparison between group A (with MetS) and group B (without MetS) as regarding	patients patients
Table (20):	Score & its components	patients patients blood
Table (21):	chemistry. Comparison between group A (without MetS) and group B (with MetS) as regarding rad findings, HAQ Score, morning	patients patients liological stiffness
Table (22-a):	& limitation of movement Relation between DAS28 S clinical parameters in the two g	Score &
Table (22-b): R	elation between DAS28 Score &	
Table (23):	parameters in the two groups Relation between DAS28 S laboratory parameters in t groups	Score & The two

List of Tables cont...

Table No.	Title	Page	No.
Table (24):	Relation between DAS28 radiological parameters in		
Table (25-a):	groups. Relation between HAQ Score parameters in the two groups.	& clinical	
Table (25-b): R	Relation between HAQ Score &		
,	parameters in the two groups.		125
Table (26):	Relation between HAQ	Score &	
	laboratory parameters in groups.		147
Table (27):	Relation between HAQ	Score &	141
T 11 (22)	radiological parameters in groups.		155
Table (28):	Relation of bone erosions and with each of sex, age and	d disease	
	duration in group A (patients MetS)		156
Table (29):	Relation of bone erosions and		150
1 able (25).	with anthropometry in §		
	(patients RA with MetS)		158
Table (30):	Relation of bone erosions and		
	with diabetic, hypertension	& family	
	history in group A (patients	RA with	
	MetS).		160
Table (31):	Relation of bone erosions and	v	
	with DAS 28 Score & its comp		101
T 11 (99)	group A (patients RA with Met		161
Table (32):	Relation of bone erosions and	•	
	with blood chemistry in (patients RA with MetS)		169
	(patients RA with MetS)		163

List of Tables cont...

Table No.	Title	Page	No.
Table (33):	Relation of bone erosions and def with HAQ Sore, decrease joint morning stiffness & lim movement in group A (patients R MetS)	space, itation A with	167
Table (34):	Relation of bone erosions and def with each sex, age & durat disease in group B (patient without MetS)	formity ion of RA	
Table (35):	Relation of bone erosions and def with anthropometry in gro (patients RA without MetS)	up B	171
Table (36):	Relation of bone erosions and def with each hypertension & fan group B (patients RA without Me	formity nily in	
Table (37):	Relation of bone erosions and de with DAS28 Score & its compone group B (patients RA without MetS)	formity ents in	
Table (38):	Relation of bone erosions and def with blood chemistry in gro (patients RA without MetS)	formity bup B	
Table (39):	Relation of bone erosions and def with each HAQ Score, dec. joint morning stiffness & lim movement in group B (patien	formity space, itation ts RA	
Table (40):	without MetS). Comparison in group A of pareceiving statins as regard DA HAQ score Error! Bookmark	atients S and	

List of Figures

Fig. No.	Title P	age No.
Figure (1):	Signaling through PDGFRs promotes to proliferation and migration of FLS	
Figure (2):	contributing to the formation of a panna A healthy joint (left-hand side) contains small volume of synovium and a th	us27 s a
Figure (3):	lining layer of FLSs	29 T-
Eigene (4):	pathways and by cytokine- or Toll-li receptor (TLR)-driven stimuli	ke 31
Figure (4):	Boggy swelling in proximinterphalangeal and metacarpophalange joints (more prominent on patient's righand) in a patient with new-ons	eal ht
Figure (5):	rheumatoid arthritis	ıts
Figure (6):	involved in DAS 28 score Effect of obesity on rheumatorarthritis outcomes: disconnect between subjective disease activity and	oid en
Figure (7):	radiographic progression Obesity and cachexia and the association with markers of metabo	eir lic
Figure (8):	syndrome in RA Comparison between the two groups regards weight (kg) and was	as ist
Figure (9):	circumference (cm)	as
Figure (10):	(cm)	as
	regards BMI	124

Fig. No.	Title	Page N	10.
Figure (11):	Comparison between the two group regards Waist Hip Ratio		194
Figure (12):	Comparison between the two group regards Diabetic.	s as	124
Figure (13):	Comparison between the two group regards Hypertension.	s as	
Figure (14):	Comparison between the two group regards FBS.		129
Figure (15):	Comparison between the two group regards 2 hrs PPBS		129
Figure (16):	Comparison between the two group regards cholesterol & triglycerides		130
Figure (17):	Comparison between the two group regards LDL & HDL.		130
Figure (18):	Comparison between the two group HAQ score.		132
Figure (19):	Treatment used in patients of RA MetS (group A) & treatment use patients of RA without MetS (group	d in	133
Figure (20):	Correlation of DAS28 score with CR group A (patients of RA with MetS).	P in	
Figure (21):	Correlation of DAS28 score with CR group B (patients of RA without Me		138
Figure (22):	Correlation of DAS28 score with ter- joint, swollen joints, decrease space & limitation movement in gr	joint	
Figure (23):	A (patients of RA with MetS) Correlation of DAS28 score with ter joint & limitation movement in grow	nder	140
Figure (24):	(patients of RA without MetS) Correlation of HAQ score with fa	- 	140
-	history in group A (patients of RA MetS).	with	143

Fig. No.	Title	Page	No.
Figure (25):	Correlation of HAQ score with sw joints in group A (patients of RA	with	4.4
Figure (26):	MetS). Correlation of HAQ score with more stiffness in group A (patients of	rning f RA	
Figure (27):	with MetS)	with ıp A	
Figure (28):	(patients of RA with MetS) Correlation of HAQ score is with fa history of RA in group B (patients of	amily of RA	
Figure (29):	without MetS) Correlation of HAQ score limitation movement in group	with p B	
Figure (30):	(patients of RA without MetS)	mber its of	
Figure (31):	RA with MetS) Correlation of HAQ score with VA group A (patients of RA with MetS)	AS in	
Figure (32):	Correlation of HAQ score with number of swollen joints in group A (patien RA with MetS)	mber nts of	
Figure (33):	Correlation of HAQ score with ES group A (patients of RA with MetS)	SR in	
Figure (34):	Correlation of HAQ score with so albumin in group A (patients of	erum f RA	
Figure (35):	with MetS) Correlation of HAQ score with CF	RP in	
Figure (36):	group A (patients of RA with MetS) Correlation of HAQ score with Ag group B (patients of RA without Me	ge in	

Fig. No.	Title P	age No.
Figure (37):	Correlation of HAQ score with duration of disease in group B (patients of F	RA
Figure (38):	without MetS)	er of
Figure (39):	RA without MetS) Correlation of HAQ score with seru albumin in group B (patients of F	m RA
Figure (40):	without MetS)	m ut
Figure (41):	MetS)	
Figure (42):	group B (patients of RA without MetS Correlation of Deformity with duration of disease in group A (patients RA without MetS)	on
Figure (43):	MetS). Correlation of Bone erosions wi duration of disease in group A (patients)	157 th
Figure (44):	RA with MetS) Correlation of Deformity with weight group A (patients RA with MetS)	in
Figure (45):	Correlation of Deformity with wai circumference in group A (patients F	st
Figure (46):	with MetS). Correlation of deformity wi	th
Figure (47):	hypertension in group A (patients F with MetS)	160
rigure (47):	swollen joints in group A (patients F with MetS)	RA

Fig. No.	Title	Page	No.
Figure (48):	Correlation of deformity with se urea in group A (patients RA MetS).	with	164
Figure (49):	Correlation of bone erosions with seurea in group A (patients RA MetS).	erum with	
Figure (50):	Correlation of bone erosions with in group A (patients RA with MetS)	ESR	
Figure (51):	Correlation of deformity with FB group A (patients RA with MetS)	S in	
Figure (52):	Correlation of bone erosions fasting blood sugar in group A (pat	with	
Figure (53):	RA with MetS) Correlation of bone erosions with hours post prandial blood suga	th 2	166
Figure (54):	group A (patients RA with MetS) Correlation of deformity with decreasing space in group A (patients)	ease	166
Figure (55):	with MetS) Correlation of deformity with limits movement in group A (patients RA	ation	168
Figure (56):	MetS). Correlation of bone erosions decrease joint space in group	with	168
Figure (57):	(patients RA with MetS)		169
Figure (58):	group B (patients RA without Mets Correlation of bone erosions	S) with	170
	duration of disease in group B (pate RA without MetS)	ients	170

Fig. No.	Title P	age No.
Figure (59):	Correlation of deformity with number tender joints in group B (patients I without MetS)	RA
Figure (60):	Correlation of bone erosions we number of swollen joints in group (patients RA without MetS).	ith B
Figure (61):	Correlation of bone erosions with hours post prandial blood sugar group B (patients RA without MetS).	2 in
Figure (62):	Correlation of deformity without MetS).	ith RA
Figure (63):	Correlation of deformity with decreasion space in group B (patients I without MetS)	ase RA
Figure (64):	Correlation of bone erosions we decrease joint space in group B (I patients without MetS).	ith RA
Figure (65):	Correlation of bone erosions with Hascore in group B (RA patients with	AQ out
	MetS)	180

List of Abbreviations

Full term Abb. ACPA Anti-citrullinated peptide antibodies ACR......American College of Rheumatology ACR/EULAR American College of Rheumatology and European League Against Rheumatism AF Abdominal fat ALLHAT Antihypertensive and Lipid-Lowering treatment to prevent Heart Attack Trial anti-CCP......Anti-cyclic citrullinated peptides APF......Antiperinuclear factor ATPIII...... Adult Treatment Panel III bDMARDs...... biological Disease modifying anti-rheumatic drugs BMD..... Bone mineral density BMI.....Body mass index CarP...... Carbamylated protein CCP...... Cyclic citrullinated polypeptide CD...... Crohn's disease CHD...... Coronary heart disease CNS Central nervous system COPD...... Chronic Obstructive Pulmonary Disease CRP...... C-reactive protein CSF1R...... Colony-stimulating factor 1 receptor CVD Cardiovascular disease CVR...... Cardiovascular risk DMARDs..... Disease modifying anti-rheumatic drugs EBV..... Epstein-Barr virus EGIR.....European Group for the Study of Insulin Resistance ESR..... Erythrocyte sedimentation rate FBS......Fasting blood sugar FLSFibroblast-like synoviocyte; FLSs..... Fibroblast-like synoviocytes FS..... Felty's syndrome