

بسم الله الرحمن الرحيم



-Call 1600-2

COERCE CORRECTO





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



CORRECT CORRECTOR



جامعة عين شمس التمثية الالكتاءني والمكاوفيلم

التوثيق الإلكتروني والميكروفيلم قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



COEFFEC CARBURATOR





بعض الوثائق

الأصلية تالفة



COLEGO COLEGORIO





بالرسالة صفحات

لم ترد بالأصل



COEFECT CARGINATION



THE CORRELATION OF LABELLED WHITE BLOOD CELL STUDIES, PAIN AND INFLAMMATION TO PREDICT JOINT DESTRUCTION IN RHEUMATOID ARTHRITIS

B1 5809

Thesis Submitted In Partial Fulfillment Of The Requirements For Doctorate Degree In Rheumatology & Rehabilitation

By

Eman Abbas Mahmoud Ali M.B.Ch B., M.Sc. (Rheumatology & Rehabilitation)

Supervised By

Prof. Dr.

Mohammad Gamal El-Dien Abdul-Motaal

Head of Rheumatology and Rehabilitation Department Assiut University, Faculty of Medicine Assiut, Egypt

Dr.

Anthony K. P. Jones

Senior Lecturer in Rheumatology Manchester University, Rheumatic Diseases Centre, Hope Hospital United Kingdom

Dr.

Mohammad Moustafa Kamal

Assistant Professor of Rheumatology and Rehabilitation Assiut University, Faculty of Medicine Assiut, Egypt

Assiut University 2000

بسم الله الرحمن الرحيم

وقل ربی زدنی علما

صدق الله العظيم (من الآية ١١٤ سورة طه) Dedicaed To

My Falents, My Hasband



My Cildren

ACKNOWLEDGEMENT

Egypt

I would like to express my gratitude to my professor Mohammad Gamal El-Dien Abdul-Motaal, Head of Rheumatology and Rehabilitation Department, Faculty of Medicine, Assiut University, for his excellent supervision, useful encouragement, guidance and support all through the course of this thesis. Special thanks to him for his administrative support towards the end of the work.

I would also like to thank my supervisor *Dr. Mohammad Moustafa Kamal*, Assistant Professor in Rheumatology and Rehabilitation, Faculty of Medicine, Assiut University for his kind supervision, support, advise and great help.

I would also like to thank all my colleagues, friends and family for their support throughout my thesis.

Very special thanks go to my husband Dr. Mohammad El-Badry for his great support, encouragement and help throughout the completion of the work for this thesis.

United Kingdom

I would like to express my gratitude to my supervisor Dr. Anthony Jones, Senior Lecturer in Rheumatology, Rheumatic Diseases Centre, University of Manchester, U.K., for his suggestion the topic of this thesis and for his useful revision, criticism and generous discussions of the present study. Additional thanks go to him for his support towards the end of the work.

I would also like to thank other members of the team in this project, for their endless support and help throughout the duration of this work: Mrs. Wendy Johns, Mrs. Kerry Griffin, Dr. Paul Watson, Dr. Ray Bennett, Dr. Charles Hutchinson, Mr. Andy Vale, Hope Hospital, University of Manchester and Dr. Mazim El-Janabi, Kings College Hospital, London.

I would like to show my appreciation to the members (and ex-members) of the pain group for their endless support and friendship throughout this work: *Debbie*, *Paula*, *Stuart*, *Chris*, *Dorothy*, *Vivienne*, and *Maryam*.

Eman Abbas Mahmoud Ali 2000

INTROL	DUCTION	į
REVIEV	V OF LITERATURE	- (
2.1	AETIOLOGY OF RHEUMATOID ARTHRITIS	- (
2.1.1	Genetic Factors	•
2.1.2		
2.1.3	Other Etiological Factors	- {
2.2	AUTOIMMUNITY	
2.3	PATHOLOGY OF RHEUMATOID ARTHRITIS	- 10
2.4	PATHOGENISIS OF RHEUMATOID ARTHRITIS	
2.4.1	the Role of Neutrophils in Rheumatoid Arthritis	15
2.4.2	Neutrophil Adherence and Transmigration	16
2.4.3	Neutrophil Adherence and Transmigration Neutrophils and Cytokines in Rheumatoid Arthritis	17
2.4.4	Mechanisms of Neutrophil-Induced Cartilage Destruction in Rheumatoid Arthritis	21
2.4.5	Role of Neutrophils in Hypoferremia	23
2.5	CLINICAL PICTURE OF RA	24
2.5.1	Criteria	24
2.5.2	Oliset	24
2.5.3	Articular Involvement	25
2.5.4	Michigatora 140dates	28
2.5.5	Non Articular Manifestations	29
2.6	COMPLICATIONS OF RHEUMATOID ARTHRITIS	32
2.6.1	Infections	32
2.6.2	Neurological Complications	32
2.6.3	Cervical Spine Dislocation	33
2.6.4	Fractures	33
2.6.5	Amyloidosis	33
2.6.6	Felty's Syndrome	34
2.7	MEASUREMENT OF INFLAMMATION AND PAIN IN RHEUMATOID	
ARTH		35
2.7.1	Commonly Used Clinical Measures that may Include or Result from Pain or	
2.7.2	Non appoiss Management St. C.	36
2.7.3	. on specific intensities of infiniting tion	37
2.7.4	Specific intensation of inflammation	39
		45
2.8 2.8.1	IMAGING OF RHEUMATOID ARTHRITIS	47
2.8.2	X-rayUltrasonography	47
2.8.2	Ultrasonography Magnetic Resonance Imaging (MRI)	48
	Magnetic Resonance Imaging (MRI)	49
	PROGNOSIS OF RHEUMATOID ARTHRITIS	
2.10	TREATMENT OF RHEUMATOID ARTHRITIS	51
2.10.1	Management Principles	5 I
	RELATIONSHIP BETWEEN PAIN AND INFLAMMATION IN	
RHEUN	MATOID ARTHRITIS	54
2.11.1	rain rainway	64
2.11.2	Nociceptive Pathways Changes	70
2.11.3	Emotional Aspects of Pain	72

SUBJEC	TS AND METHODS	77
3.1	SUBJECTS	 77
3.1.1		_ 77
3.2	METHODS	78
3.2.1	Clinical Assessments	_ 79
3.2.2	White Cell Labelling Protocol	_ 79
3.2.3		
3.2.4		_ 90
3.2.5		
3.2.6	• • • • • • • • • • • • • • • • • • • •	
3.2.7	Coping Strategies Questionnaire (CSQ) (Rosential & Keefe, 1983)	_ 91
Disability	in Rheumatoid Arthritis	100
4.1	Introduction	100
4.2	Methods	101
4.2.1	Subjects' criteria and Methods	101
4.2.2	Data Analysis	101
4.3	Results	
	Summary of Results	110
4,4	Discussion	
		•
	Contributed to the Global Pain and Mean Joint Pain in Patients With oid Arthritis	112
5.1	Introduction	
5.2	Subjects and Methods	113
5.2.1		_ 113
5.2.2	Data Analysis	_ 113
5.3	Results	113
5.3.1	Global Pain Data	115
5.3.2	Main Joint Pain Data	125
5.3.3	Summary of Results	131
5.4	Discussion	133
The Corr	elation of the White Cell Scintigraphy with Clinical and Biochemistry	
	s of the Disease Activity and The Stability of Measures	134
6.1	Introduction	134
6.2	Mathada	135
6.2.1		135
6.2.2	Data Analysis	135
6.3		_
6.3.1		_ 136 _ 136
6.3.2	Correlation Data	130
		_
6.4	Discussion	156

Correlati the Patie	on between Labelled White Cell Uptake, Pain, Inflammation nts and Joint Destruction in Rheumatoid Arthritis	n Assessed by 157
7.1	Introduction	
7.2	N/L-413-	
7.2.1	Subjects' criteria and Methods	151
7.2.2	Data Analysis	158
7.3	Results Pight Knoo Data Basulta	
7.3.1	Right Knee Data Results	168
7.3.2	Left Knee Data Results	178
7.3.3	Summary of the Results	18
7.4	Discussion	
Final Dis	cussion and Suggestion for Further Work	
8.1	Summary of the Results Presented in this Thesis	
8.2	Suggestions for Further Work	185
	Final Conclusion	
REFERE		186

LIST OF ABBREVATIONS

ACR American College of Rheumatology ARA American Rheumatism Association

CFP Cell free plasma
COX Cyclo-oxygenase

CPD Citrate phosphate dextrose adenine anti-coagulant

CRP C-reactive protein

CSQ Coping strategies questionnaire

DMARDs Disease modifying anti-rheumatic drugs

ESR Erythrocyte sedimentation rate.

Gd-PTPA Gadolinium-diethylene-triamine pentaacetic acid GM-CSF Granulocyte-macrophage colony-stimulating factor

HAD Hospital anxiety and depression scale
HAQ Health assessment Questionnaire

HIG Human immunoglobulin

HMPAO Hexamethyl propylene amine oxime ICAM-1 Intracellular adhesion molecule 1

IL-1 Interleukin-1
IL-6 Interleukin-6
IL-8 Interleukin-8

LIF Leukaemia inhibitory factor

LTB4 Leukotriene B4

MBq Megabecquerel (unit of radio-activity measurement)

MCP Metacarpophalangeal

MHC Major histocompatibility complex

MMPs Metalloproteinases

MRI Magnetic resonance imaging.

MTP Metatarsophalangeal

MTX Methotrexate

NSAIDs Non steroidal anti-inflammatory drugs

OA Osteoarthritis

PAF Platelet activating factor
PDGF Platelet-derived growth factor

PGE2 Prostaglandin E2

PIP Proximal interphalangeal
PMNL Polymorphonuclear leukocyte

PRP Platelet-rich plasma RA Rheumatoid arthritis ROL Region of interest ROS Reactive oxygen species SIPrimary somatosensory cortex SII Secondary somatosensory cortex **SAARDs** Slow acting anti-rheumatic drugs SF-MPO Short-form McGill Pain Questionnaire

Std. Standard.

STT Spinothalamic tract

TGF-B Transforming growth factor B TNF- α Tumor necrosis factor α VAS Visual Analogue Scale WCU White cell uptake

7 Gamma
111 In
117 Indium
118 Gamma
119 Indium
119 Gamma
119 Indium
119 Gamma
119 Indium
119 Technetium-99 m

⁹⁹TC^m HMPAO Technetium 99m hexamethyl propylene amine oxime.