شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه 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

Clinical Types of Movement Disorders in Patients with Multiple Sclerosis

Thesis

Submitted for Partial Fulfillment of Master Degree in Neuropsychiatry

By

Ahmed Mohamed Elsayed Abd el Aty
M.B.B.Ch., Menoufiya University (2014)

Under supervision of

Prof. Dr. Ayman Mohamed Nassef
Professor of Neurology
Faculty of Medicine - Ain Shams University

Prof. Dr. Ali Soliman Ali Shalash
Professor of Neurology
Faculty of Medicine - Ain Shams University

Dr. Mahmoud Saad Swelam
Lecturer of Neurology
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2021

Acknowledgments

First and foremost, I feel always indebted and grateful to **Allah** *for giving me the will and the strength to complete this study.*

I wish to express my deep appreciation and sincere gratitude to **Prof. Dr. Ayman Mohamed Nasef,** *Professor of Neurology and Psychiatry, Ain Shams University, for his close supervision, valuable instructions, continuous help, patience, advices and guidance. He has generously devoted much of his time and effort for planning and supervision of this study. It was a great honor to me to work under his direct supervision*

I wish to express my great thanks and gratitude to **Prof. Dr. Ali Soliman Ali Shalash,** *Professor of Neurology and Psychiatry, Ain Shams University, for her kind supervision, indispensable advice and great help in this work.*

I wish to express my great thanks and gratitude to **Dr. Mahmoud Saad Swelam**, *Lecturer of neurology and Psychiatry, Ain Shams University, for his kind supervision, indispensable advice and great help in this work.*

Last and not least, I want to thank all my family, my colleagues, for their valuable help and support.

Finally I would present all my appreciations to my patients, without them, this work could not have been completed.

Ahmed Mohamed Elsayed

List of Contents

List of Tables

List of Tables Cont...

List of Figures

List of Abbreviations

Abbr.	Full-term
25OHD	25-hydroxy vitamin D
ADL	Activities of Daily Living questionnaire
anti-VCA	Anti-viral capsid antigen
APAs	Anticipatory postural adjustments
BBB	Blood-Brain Barrier
BDI	Beck Depression Inventory
BFMDS	Burke-Fahn-Marsden Disability Scale
BFMMS	Burke-Fahn-Marsden Movement Scale
BP	Bodily Pain
CCAS	Cerebellar Cognitive-Affective Syndrome
CIS	Clinically isolated syndrome
CIs	Cognitive impairments
CNPase	Cyclic Nucleotide Phosphodiesterase
CNS	Central nervous system
CoP	Center of pressure
CP	Cerebellar Peduncle
CSF	Cerebrospinal fluid
DBS	Deep Brain Stimulation
DIS	Dissemination In Space
DIT	Dissemination In Time
EAE	Experimental autoimmune encephalomyelitis
EBNA	Epstein-Barr virus (EBV) nuclear antigen
EBV	Epstein-Barr Virus

EDSS	**Expanded Disability Status Scale**
EMG	**Electromyography**
ESS	**Environmental Status Scale**
ET	**Essential Tremors**
FMRS	**Fahn-Marsden dystonia rating scale**
FT	**Functional Tremors**
GH	**General Health**
GM	**Gray Matter**
HRQol	**Health Related Quality of life**
ISS	**Incapacity Status Scale**
LV	**Lesion Volume**
MAG	**Myelin Associated Glycoprotein**
MBP	**Myelin basic protein**
MCP	**Middle Cerebellar Peduncle**
MDs	**Movement disorders**
MH	**Mental Health**
MHC	**Major Histocompatibility Complex**
MMPs	**Matrix metalloproteinases**
MoCA	**Montreal Cognitive Assessment**
MOG	**Myelin oligodendrocyte glycoprotein**
MRI	**Magnetic resonance imaging**
MS	**Multiple sclerosis**
NAGM	**Normally Appearing Grey Matter**
NAWM	**Normally Appearing White Matter**
OCB	**Oligoclonal Bands**
OPC	**Oligodendrocyte Progenitor Cells**

PET	**Positron emission tomography**
PF	**Physical Functioning**
PKD	**Paroxysmal kinesigenic dyskinesia**
PLP	**Proteolipid protein**
PPMS	**Primary Progressive MS**
QoL	**Quality of life**
RE	**Role Limitation due to Emotional Problem**
RIS	**Radiologically isolated syndrome**
RLS	**Restless leg syndrome**
RRMS	**Relapsing remitting MS**
RP	**Role Limitation due to Physical problem**
SARA	**Scale for the Assessment and Rating of Ataxia**
SCP	**Superior Cerebellar Peduncle**
SDMT	**Symbol Digit Modalities Test**
SF	**Social Functioning**
SF-36	**Short Form 36 Questionnaire**
SPMS	**Secondary progressive MS**
Th1	**T- helper type 1**
TSPO	**Translocator protein**
UPDRS	**Unified Parkinson's Disease Rating Scale**
VCAM-1	**Vascular cell adhesion molecule-1**
VLA-4	**Very late antigen-4**
VT	**Vitality**
WM	**White matter**

Abstract

Background: Little is known about the true prevalence and clinical characteristics of movement disorders in early multiple sclerosis (MS), associated clinical disability and their effect on QOL. We conducted a cross sectional study to fill this knowledge gap.

Objectives: to study the prevalence of movement disorders in early stages of multiple sclerosis, presence of other clinical disability and their effect on QOL.

Patients and method: This is a cross sectional observational study. The patients group included 250 patients with RRMS whom were recruited consecutively from the MS units of Ain Shams and Nasr institute hospitals. Each eligible patient was interviewed and examined for presence of MDs, Patients were divided into 2 groups, group A without MDs and group B showing MDs. General and neurological examination including Expanded Disability Status Scale (EDSS) score at time of interview for both groups. Magnetic resonance imaging (MRI) of brain and cervical spinal cord obtained at the time of interview with documentation of MS plaques involvement for both groups. RRMS patients with MDs (group B) are subjected to different assessment for depression by Beck Depression Inventory (BDI), cognitive assessment by Montreal Cognitive Assessment (MOCA) scale, disability and quality of life (QOL) by the Short Form 36 Health Survey Questionnaire.

Results: This study included 250 RRMS. onset of their movement disorders was 2.69 ± 2.34 years from MS diagnosis with mean EDSS 3.515 ± 1.04. Cerebellar signs are present in 97% of total number of MDs and 26% of total sample, regarding tremors, 36 patients in this study showed tremors representing 53.7% of movement disorders patients, 14.4% of total sample of RRMS patients. This study showed presence of 5 cases of restless leg syndrome 7.5% of total number of MDs. Four cases of dystonia are present in this study representing 6% of MDs patients. Patients with MDs showed presence of depressive symptoms and cognitive affection with negative impact on QOL. Tremors severity is not correlated with either cognition or depression scores where ataxia is correlated with depression score only. MRI assessment of patients with MDs showed higher lesion load and involvement of infratentorial structures especially cerebellum and its connections and brain stem.

Conclusion: Movement disorders are common to occur in patients with MS than previously known especially ataxia and tremors early in the course of the disease. Presence of MDs is related to high lesion load and strategic location of these lesions. Special assessment of MDs as independent cause of disability with concomitant depression and CI especially early in the disease course should be taken in consideration due to their negative impact on QOL.

Key words: Movement Disorders, Multiple Sclerosis, Tremors, Ataxia.

INTRODUCTION

Multiple sclerosis (MS) is a chronic inflammatory disease of the brain and spinal cord that is a common cause of serious physical disability in young adults ***(Dendrou et al., 2015).*** MS patients have various clinical presentations depending on the involved area of the central nervous system (CNS). The definite etiology of MS is still not known but most probably it is multifactorial ***(Guzel et al., 2015).***

There is a debate whether inflammation initiates neurodegeneration or neurodegeneration occurs independently of inflammation ***(Losy, 2013).*** The course of MS is highly varied and unpredictable. In most patients, the disease is characterized initially by episodes of reversible neurological deficits, which is often followed by progressive neurological deterioration over time ***(Olek, 2011).***

The pathological findings in MS include inflammation, demyelination (degeneration), remyelination, axonal loss and glial scar formation (failure of repair) ***(Bruck, 2005).*** The main character of the inflammatory phase is associated with the destruction of the blood-brain barrier and local expression of pro-inflammatory cytokines and chemokines ***(Gumus et al., 2015).***