

ACKNOWLEDGMENT

First of all, thanks to **ALLAH** for help and support to conduct this work honestly and faithfully.

I would like to express my deepest gratitude and great appreciation to **Prof. Dr. Diaa Fahmy Mohasseb**, Professor of Physical Medicine, Rheumatology and Rehabilitation, Faculty of Medicine, University of Alexandria, who guided me with his scientific knowledge, unlimited experience, great support and precious advice during supervising this work.

I would like to express my gratitude and appreciation to **Dr. Hayam Mostafa Abdel Ghany**, Fellow of Physical Medicine, Rheumatology and Rehabilitation Faculty of Medicine, University of Alexandria, for her guidance and constructive remarks that helped me to complete this work successfully.

I am greatly indebted to **Vice Admiral Med. Khaled Elsayed Mahmoud Eltobgy**, Director of Naval Hyperbaric Medical Institute, for his effort and precious time he gave to supervise and review the entire work.

I would like to extend my thanks to the staff members and the whole team of The Naval Hyperbaric Medical Institute, for their great help and the kind support they offered to me to complete the work successfully.

I would like to thank all staff members of Physical Medicine, Rheumatology and Rehabilitation department, Faculty of Medicine, University of Alexandria, for their kind support.

I would like to thank my patient, parents and caregivers.

I would like also to thank my family and friends who supported me.

LIST OF CONTENTS

ACKNOWLEDGMENT	i
LIST OF CONTENT	ii
LIST OF TABLES.....	iii
LIST OF FIGURES.....	iv
LIST OF ABBREVIATION	v
I. INTRODUCTION	1
II. AIM OF THE WORK.....	20
III. SUBJECTS.....	21
IV. METHODS.....	22
V. RESULTS.....	24
VI. DISCUSSION.....	48
VII. SUMMARY.....	54
VIII. CONCLUSIONS.....	56
IX. RECOMMENDATIONS	57
X. REFERENCES	58
XI. APPENDICES	
XII. PROTOCOL	
XIII. ARABIC SUMMARY	

LIST OF TABLES

Table	page
1) The studied groups according to their demographic data	25
2) comparison between both groups according to perinatal history	27
3) Postnatal history of both groups	28
4) Topographic pattern of both groups	29
5) Associated problems in both groups	30
6) Drug history of the studied groups	30
7) Associated deficits in both groups	31
8) Clinical findings in both groups	32
9) Comparison between the studied groups according to the assessment scales before and after the treatment period	33
10) Comparison between before and after treatment according to the assessment scales in group II	35
11) Comparison between before and after treatment according to the assessment scales in group I	36
12) Before and after treatment according to the assessment scales in group (I a) ≤ 5 years	38
13) Before and after treatment according to the assessment scales in group (I b) >5 years	40
14) Comparison between group (I a) and group (I b) according to MAS	43
15) Comparison between group (I a) and group (I b) according to GMFCS	44
16) Comparison between group (I a) and group (I b) according to MACS	45
17) Improvement of cognitive problems, drooling and sleep disturbance before and after the sessions among group I	46

LIST OF FIGURES

Figure	page
1) Male to female ratio among both groups	25
2) Urban rural ratio among both groups.....	26
3) Percentage of patients up to and more than 5 years.....	26
4) Perinatal history of the both groups.....	27
5) Postnatal history of both groups	28
6) Topographic pattern of both groups	29
7) Associated deficits in both groups.....	31
8) Clinical findings in both groups	32
9) Comparison between MAS before and after the treatment period among both groups	34
10) Comparison between GMFCS before and after the treatment period among both groups	34
11) Comparison between MACS before and after the treatment period among both groups	34
12) Comparison between before and after treatment period assessment group(I).....	37
13) Before and after treatment period assessment group (I a)	42
14) Before and after treatment period assessment group (I b).....	42
15) Comparison between group (I a) and group (I b) according to MAS.....	43
16) Comparison between group (I a) and group (I b) according to GMFCS.....	44
17) Comparison between group (I a) and group (I b) according to MACS.....	45
18) Improvement among group I considering cognitive problems, drooling and sleep disturbance before and after the sessions.....	46

LIST OF ABBREVIATIONS

ATA	Atmosphere Absolute
BMD	Bone Mineral Density
BoNT	Botulinum Neurotoxin
CO	Carbon Monoxide
CO₂	Carbon Dioxide
COPD	Chronic Obstructive Pulmonary Disease
CP	Cerebral Palsy
CT	Computed Tomography
DNA	Deoxyribonucleic Acid
EEG	Electroencephalogram
FDA	Food And Drug Administration
GMFCS	Gross Motor Functional Classification System
HBOT	Hyperbaric Oxygen Therapy
IL-1	Interleukin -1
IN	Idling Neurons
MACS	Manual Ability Classification System
MAS	Modified Ashworth's Scale
mmHg	Millimeter mercury
MRI	Magnetic Resonance Imaging
O₂	Oxygen
PCO₂	Partial Pressure Of Carbon Dioxide
PO₂	Partial Oxygen Pressure
PVL	Periventricular Leukomalacia
TNF- α	Tumor Necrosis Factor α

