شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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HANAA ALY

Effect of Use of Laser Acupuncture for Treatment of Drooling and Hypertonia in Children with Cerebral Palsy

A Thesis

Submitted for partial fulfillment of Master Degree in Pediatrics

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2021

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قالوا
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إلا ما علمتنا إنك أنت
العليم الحكيم
صدق الله العظيم
سورة البقرة الآية: ٣٢

Acknowledgments

First and foremost, I feel always indebted to **Allah**, *the* ***Most Beneficent*** *and* ***Merciful****, who gave me the strength to accomplish this work.*

My deepest gratitude to my supervisor, **Prof. Dr. Sahar Mohamed Ahmed Hassanein,** *Professor of Pediatrics, Faculty of Medicine, Ain Shams University, for her valuable guidance and expert supervision, in addition to her great deal of support and encouragement. I really have the honor to complete this work under her supervision.*

I would like to express my great and deep appreciation and thanks to **Prof.Dr. Eitedal Mahmoud Daoud,** *Professor of Pediatrics, National Research Center, for her meticulous supervision, and her patience in reviewing and correcting this work.*

I must express my deepest thanks to **Ass.Prof.Dr. Dalia Mohamed Ezz El Din Elmikawy,** *Assistant Professor of Physical Medicine and Rehabilitation, Faculty of Medicine, Ain Shams University, for guiding me throughout this work and for granting me much of her time. I greatly appreciate her efforts.*

I would like also to thank **Dr. Ahmed Gamal El-Wehedy,** *for his help and cooperation during the whole work.*

Special thanks to my **Parents,** *my* **Husband** *and all my* **Family** *members for their continuous encouragement, enduring me and standing by me.*

Nashwa Khairy Ebada

List of Contents

Subject	*Page No.*
List of Abbreviations	**i**
List of Tables	**iii**
List of Figures	**iv**
Introduction	**1**
Aim of the Work	**3**
Review of Literature	
Cerebral Palsy	4
Spasticity	24
Drooling	33
Laser Acupuncture	44
Patients and Methods	**55**
Results	**65**
Discussion	**91**
Summary	**103**
Conclusions	**107**
References	**109**
Arabic Summary	**—**

List of Abbreviations

Abbr.	Full-term
ASD	Autism spectrum disorder
BBB	Blood-brain-barrier
BTX-A and B	Botulinum toxin A and B
CP	Cerebral palsy
CT	Computed tomography
DQ	Drooling quotient
DTI	diffusion tensor imaging
GMFCS	Gross Motor Function Classification System
ICF	International Classification of Functioning, Disability, and Health
ITB	Intrathecal Baclofen
LILT	Low intensity laser therapy
LLLT	low-level laser therapy
MRI	Magnetic resonance imaging
OR	Oral
PBM	Photobiomodulation
PCAs	Personal care assistants
PVL	Periventricular leukomalacia
RF-DRG	Radiofrequency lesion of the dorsal root ganglion (RF-DRG)

SDR : Selective dorsal rhizotomy

SL : Sublingual

SNAP-25 : Sensitive factor attachment protein-25

TD : Trans-dermal

TENS : Transcutaneous electrical nerve stimulation

UMN : Upper motor neuron

List of Tables

Table No.	Title	Page No.
Table (1):	Laser parameters	62
Table (2):	Modified Ashworth scale	62
Table (3):	Range of motion by joint.	63
Table (4):	Medical Research Council grading of muscle power	63
Table (5):	Gross Motor Function classification system	64
Table (6):	Thomas-Stonnel and Greenberg scale	64
Table (7):	Demographic characteristics of both treatment and control group:	66
Table (8):	Baseline gross motor milestones of both groups	66
Table (9):	Comparison regarding range of motion of ankle plantar flexion (degree)	67
Table (10):	Comparison regarding range of motion of ankle dorsiflexion (degree)	69
Table (11):	Comparison regarding range of motion of knee flexion (degree)	71
Table (12):	Comparison regarding range of motion of hip abduction (degree)	73
Table (13):	Comparison regarding range of motion of hip flexion (degree)	75
Table (14):	Comparison regarding tone of ankle plantar flexors	77
Table (15):	Comparison regarding tone of knee flexors	79

Table (16): Comparison regarding tone of hip adductors ... 81

Table (17): Comparison regarding tone of hip flexors 83

Table (18): Comparison regarding power of hip flexors 85

Table (19): Comparison regarding power of knee extensors 87

Table (20): Comparison regarding gross motor function (degree)..... 89

Table (21): Comparison regarding drooling (degree) 90

List of Figures

Figure No.	Title	Page No.
Figure (1):	Gross motor function classificaiton system	59
Figure (2):	Diode laser device	60
Figure (3):	Comparison regarding range of motion of right ankle plantar flexion	68
Figure (4):	Comparison regarding range of motion of left ankle plantar flexion	68
Figure (5):	Comparison regarding range of motion of right ankle dorsiflexion	70
Figure (6):	Comparison regarding range of motion of left ankle dorsiflexion	70
Figure (7):	Comparison regarding range of motion of right knee flexion	72
Figure (8):	Comparison regarding range of motion of left knee flexion	72
Figure (9):	Comparison regarding range of motion of right hip abduction	74
Figure (10):	Comparison regarding range of motion of left hip abduction	74
Figure (11):	Comparison regarding range of motion of right hip flexion	76
Figure (12):	Comparison regarding range of motion of left hip flexion	76
Figure (13):	Comparison regarding tone of ankle right planterflexors	78

Figure (14): Comparison regarding tone of left ankle planterflexors 78

Figure (15): Comparison regarding tone of right knee flexors 80

Figure (16): Comparison regarding tone of left knee flexors..... 80

Figure (17): Comparison regarding tone of right hip adductors 82

Figure (18): Comparison regarding tone of left hip adductors 82

Figure (19): Comparison regarding tone of right hip flexors..... 84

Figure (20): Comparison regarding tone of left hip flexors..... 84

Figure (21): Comparison regarding power of right hip flexors 86

Figure (22): Comparison regarding power of left hip flexors..... 86

Figure (23): Comparison regarding power of right knee extensors 88

Figure (24): Comparison regarding power of left knee extensors 88

Figure (25): Comparison regarding gross motor function 89

Figure (26): Comparison regarding drooling 90

Introduction

Cerebral palsy (CP) clinically defined as neurodevelopmental disorder that results from a disruption in the development in the infantile or fetal brain. Cerebral palsy is usually associated by sensation, cognition, communication, perception, and/or behavioral disorders, and/or by a seizure disorder". It affects over 17 million people worldwide and is the most common physical disability in childhood ***(Cerebral Palsy Alliance Research Foundation, 2018).***

In Egypt it has an estimated prevalence of 2.04 per 1000 live births. Prognosis of cerebral palsy patients usually relies on the type and severity of the pathological neurological insult and if there are associated medical comorbidities ***(Mathewson and Lieber, 2015).***

Spastic cerebral palsy is by far the most common type of overall cerebral palsy, occurring in about 70% of all cases. Spasticity is the result of upper motor neuron lesion in the brain as well as the corticospinal tract or the motor cortex. It is also considered to be a critical factor preventing movements in these patients. In addition to motor impairment, children with cerebral palsy may also experience learning difficulties, have difficulty feeding and have seizure conditions. Moreover, many children may experience sensory impairments and have difficulties communicating ***(Mathewson and Lieber, 2015).***

Drooling, or sialorrhoea, is a common difficulty faced by children with neurological impairment including cerebral palsy. It may lead to a reduction in their quality of life, causing skin irritation, dehydration and high levels of embarrassment and social isolation for both the patient and family ***(Collins et al., 2020).***

Conventional therapy for cerebral palsy has been concentrated to increase the function and minimize complications. Acupuncture is a medical procedure, an effective nonpharmacological therapy and provides promising results for some pediatric problems ***(Smith and Kurian, 2016)***.

Laser acupuncture is one of the acupuncture techniques with minimal side effects and safe for children. Stimulation of acupuncture points using low intensity laser light can induce photobiostimulation reaction on cells and tissues. Laser acupuncture does not cause mechanical effect resembling the manual acupuncture; however, it has similar mechanism in stimulating the signal transduction pathway ***(Putri et al., 2020).***