

Assessment of Cognitive Functions in Patients with Carotid Stenosis Undergoing Carotid Intervention

Thesis

*Submitted for Partial Fulfillment of MD Degree
In Neurology*

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2018**



Acknowledgement

First of all, all gratitude is due to Allah almighty for blessing this work, until it had reached its end, as a part of his generous help, throughout my life.

Really I can hardly find the words to express my gratitude to Prof. Dr. Samia Ashour Mohamed Helal Professor of Neurology, faculty of Medicine, Ain Shams University, for her supervision, continuous help, encouragement throughout this work and tremendous effort she has done in the meticulous revision of the whole work. It is a great honor to work under her guidance and supervision.

I am eternally grateful to Prof. Dr. Mahmoud Haroun El Boulkemy Professor of Neurology, faculty of Medicine, Ain Shams University, for his help and keep support, without his help this work would have never been completed. I'm deeply indebted to him for his scrutiny, his comments and suggestion and his deep interest in the subject.

I would like also to express my sincere appreciation and gratitude to Prof. Dr. Azza Abdel Nasser Abel Aziz, Professor of Neurology, faculty of Medicine, Ain Shams University, for her continuous directions and support throughout the whole work.

Really I can hardly find the words to express my gratitude to Prof. Dr. Ayman Mohamed Ahmed Nassef Professor of Neurology, Faculty of Medicine, Ain Shams University for his continuous directions and meticulous revision throughout the whole work. I really appreciate his patience and support.

I would like to express my deepest gratitude to Assist. Prof. Dr. Ahmed El Bassiouny, Assistant professor of Neurology, Faculty of Medicine, Ain Shams University for his kind advice support and valuable supervision and his great effort throughout this work,

Last but not least,, I wish to express my love and respect to my parents, my husband, my brother and my sister, for their endless love and care, for their valuable emotional support and continuous encouragement which brought the best out of me. I owe them all every achievement throughout my life.

Finally, my thanks should go to all the patients who were the subjects of this work and who cooperated in this research.



Eman Farouk Osman

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لسبحناك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدقة الله العظيم

سورة البقرة الآية: ٣٢

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List of Abbreviations

Abbreviation	Meaning
A1	The 1 st segment of the anterior cerebral artery
A2	The 2 nd segment of the anterior cerebral artery
A3	The 3 rd segment of the anterior cerebral artery
ACA	Anterior cerebral artery
ACAS	Asymptomatic carotid artery stenosis
ACC	Anterior cingulate cortex
ACE-I	Angiotensin-converting enzyme inhibitors
AChA	Anterior choroidal artery
ACOM	Anterior communicating artery
ACST	Asymptomatic carotid surgery trial
ACT	Activated clotting time
ACT 1	Asymptomatic carotid trial
AD	Alzheimer disease
ADC	Apparent diffusion coefficient
ADVANCE	Acute Neuropsychological Changes Following Stenting with Distal Protection
AF	Atrial fibrillation
AHA	American heart association
AI	Anterior insula
APOE	Apolipoprotein E
ARBs	Angiotensin receptors blockers
ARR	Absolute risk reduction

List of Abbreviations

Abbreviation	Meaning
BBB	Blood brain barrier
BDNF	Brain derived neurotrophic factor
BMI	Body mass index
BMT	Best medical treatment
BNT-3	Boston naming test-3
BOLD	blood oxygenation level-dependent
BP	Blood pressure
BZ	border-zone
C1	Cervical segment of the internal carotid artery
C2	Petrous segment of the internal carotid artery
C3	Lacerum segment of the internal carotid artery
C4	Cavernous segment of the internal carotid artery
C5	Clinoidal segment of the internal carotid artery
C6	Ophthalmic segment of the internal carotid artery
C7	Communicating segment of the internal carotid artery
Ca 2+	calcium
CABG	Coronary artery bypass graft
CAR	Carotid artery revascularization

List of Abbreviations

Abbreviation	Meaning
CAS	Carotid artery stenting
CASES	Carotid artery stenting with emboli protection surveillance
CAVATAS	Carotid and Vertebral Artery Transluminal Angioplasty Study
CBC	Complete blood count
CBF	Cerebral blood flow
CC	Common carotid
CCA	Common carotid artery
CDPCho	Cytidine-5-diphosphocholine
CDUS	Carotid duplex ultrasound
CEA	Carotid endarterectomy
CEN	Central executive network
CEUS	Contrast enhanced ultrasound
CHS	Cerebral hyperperfusion syndrome
CI	Confidence interval
CIE	Carotid ischemic event
CIN	Contrast induced nephropathy
CIND	Cognitive impairment no dementia
CLR	Conceptual level responses
CM	Centimeter
CMRO2	Cerebral metabolic rate of oxygen

List of Abbreviations

Abbreviation	Meaning
CREST	Carotid revascularization endarterectomy versus stenting trial
CS	Carotid stenosis
CT	Computed tomography scan
CTA	Computed tomography angiography
DA	Dopamine
DES	Dysexecutive syndrome
DL	Deciliter
DLPFC	dorsolateral prefrontal cortex
DM	Diabetes mellitus
DMN	Default mode network
DPFC	dorsal prefrontal cortex
DSA	Digital subtraction angiography
DSM-V	Diagnostic and statistical manual of mental disorders
DTI	Diffusion tensor imaging
DUS	Duplex ultrasound
DWI	Diffusion weighted imaging
ECA	External carotid artery
ECST	European carotid surgery trial
EFs	Executive functions

List of Abbreviations

Abbreviation	Meaning
EPDs	Embolic protection devices
Fc	Functional connectivity
FLAIR	Fluid attenuation inversion recovery
fMRI	Functional Magnetic resonance imaging
GP	Glycoprotein
HDL-C	High density lipoprotein cholesterol
20-HETE	20-hydroxyeicosatetraenoic acid
HF	Heart failure
¹H-MRS	Proton magnetic resonance spectroscopy
HR	Hazard ratio
HRSD	Hamilton rating scale for depression
HS	Highly significant
HTN	Hypertension
ICA	Internal carotid artery
ICH	Intra cerebral hemorrhage
ICSS	International carotid stenting study
IMT	Intima-media thickness
IQR	Interquartile range
ISHD	Ischemic heart disease
ISR	In-stent restenosis
IV	Intravenous
KG	Kilogram

List of Abbreviations

Abbreviation	Meaning
LCCA	Left common carotid artery
LDL-C	Low density lipoprotein cholesterol
M1	The 1 st segment of the middle cerebral artery
M2	The 2 nd segment of the middle cerebral artery
M3	The 3 rd segment of the middle cerebral artery
M4	The 4 th segment of the middle cerebral artery
MCA	Middle cerebral artery
MCI	Mild cognitive impairment
MES	Micro emboli stemming
Mg	Milligram
mGluR	Metabotropic glutamate receptor
MI	Myocardial infarction
mL	Milli-liter
miR	microRNA
MMPs	matrix metalloproteinases
MMSE	mini-mental state examination
mm²	Millimeter square
mmol/L	Milli-mole per liter
MoCA	Montreal cognitive assessment
MRA	Magnetic resonance angiography
MRI	Magnetic resonance image
MTI	Magnetization transfer imaging

List of Abbreviations

Abbreviation	Meaning
MTR	Magnetization transfer ratio
MTT	Mean transient time
NAA/Cho	N-acetyl aspartate/ choline related compounds
NAA/Cr	N-acetyl aspartate/ phosphocreatine
NASCET	North American symptomatic carotid endarterectomy trial
NCD	Neurocognitive disorders
NIHSS	National institute of health stroke scale
NPO	Nothing Per Os
NS	Non-significant
NVU	Neurovascular unit
P1	The 1 st segment of the posterior cerebral artery
P2	The 2 nd segment of the posterior cerebral artery
PC	Personal computer
PCA	Posterior cerebral artery
PCC	Posterior cingulate cortex
PCOM	Posterior communicating artery
PET	Positron emission tomography
PFC	prefrontal cortex
PO	Per Os

List of Abbreviations

Abbreviation	Meaning
PPC	Posterior parietal cortex
PSCI	Post stroke cognitive impairment
PW-MRI	Perfusion weighted magnetic resonance imaging
RHV	Rotating hemostatic valve
ROCF	Rey-Osterrieth complex figure test
RR	Relative risk
SAPPHIRE	Stenting and angioplasty with protection in patients at high risk for endarterectomy
SBP	Systolic blood pressure
SD	Standard deviation
SES	Self-expandable stents
SLE	Systemic lupus erythematosus
SMCs	Smooth muscle cells
SN	Salience network
SPECT	Single photon emission tomography
TCD	Transcranial Doppler
TIA	Transient ischemic attack
TMB	Transient monocular blindness
TMT	Trail making test
Tpa	Tissue plasminogen activator

List of Abbreviations

Abbreviation	Meaning
TTP	Time to peak
UK	United kingdom
VaD	Vascular dementia
VCI	Vascular cognitive impairment
VMPFC	Ventromedial prefrontal cortex
Vs	Versus
WAIS-III	Wechsler adult intelligence scale third edition
WARSS	Warfarin Aspirin Recurrent Stroke Study
WCST	Wisconsin card sorting test
WM	White matter
WMH	White matter hyperintensities
WML	White matter lesions
WMST	Wechsler memory scale test
WSS	wall shear stress