



Acute stroke in Egyptian women: Etiology, Risk factors and Clinical picture

Thesis

*Submitted for partial fulfillment of Master Degree in
Neuropsychiatry*

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2014



السكتة الدماغية الحادة في المرأة المصرية: المسببات، عوامل الخطورة والصورة السريرية

رسالة

**توطئة للحصول علي درجة الماجستير في
طب المخ والأعصاب والطب النفسي**

مقدمة من

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٢٠١٤



First, I wish to express my sincere gratitude and thanks to Allah who give me the help, the care and the ability to finish this work.

I would like to express my deepest gratitude to *Prof. Dr. Taha Kamel Alloush*, Professor of Neurology, for his valuable supervision, encouragement and scientific support.

Words cannot express my sincere thanks to *Dr. Yousry Abo El-naga Abd El-hamid*, Assistant Professor of Neurology for his meticulous supervision, encouragement and valuable advices and suggestions.

I am deeply indebted to *Dr. Alia Hassan Mahmoud Mansour* for her kind supervision, indispensable suggestions and great help.

Finally, I would like to thank all my professors and all my colleagues in the Neuropsychiatry department.

Words can never express my sincere thanks to my husband, my father, my mother and my sisters.





"رَبِّ أَوْزِعْنِي أَنْ أَشْكُرَ نِعْمَتَكَ الَّتِي
أَنْعَمْتَ عَلَيَّ وَعَلَىٰ وَالِدَيَّ وَأَنْ أَعْمَلَ صَالِحًا
تَرْضَاهُ وَأَصْلِحْ لِي فِي ذُرِّيَّتِي
إِنِّي تُبِّتُ إِلَيْكَ وَإِنِّي مِنَ الْمُسْلِمِينَ"

صدق الله العظيم

سورة الأحقاف (١٥)

Dedication

*This work is dedicated to the most
important persons in my life*

*✍ My Husband Abdelrahman,
My father, My mother
& My sisters*

*For their warm affection,
patience, encouragement, and for
always being there when I
needed them*



Yasmin

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List of Abbreviations

ACA	Anterior Cerebral Artery
aCLs	Anticardiolipin Antibodies
AF	Atrial Fibrillation
aPLs	Antiphospholipid Antibodies
APS	Antiphospholipid Antibody Syndrome
ASUSH	Ain Shams Specialized University Hospital
AVM	Arteriovenous Malformation
BI	Barthel Index
BP	Blood Pressure
CAS	Carotid Artery Stenting
CBC	Complete Blood Count
CCB	Calcium Channel Blocker
CE	Carotid Endarterectomy
CEA	Carotid Endarterectomy
CEE	Conjugated Equine Estrogen
CRP	C-Reactive Protein
CT brain	Computed Topography
CVS	Cerebrovascular Stroke
CVT	Cerebral Venous Thrombosis
ECS	Extracranial Stenosis
ESR	Erythrocyte Sedimentation Rate
FMD	Fibromuscular Dysplasia
HbA1c	Glycosylated Hemoglobin

☞ List of Abbreviations ☜

HIT	Heparin-Induced Thrombocytopenia
HS	Highly Significant
HT	Hormonal Therapy
ICA	Internal Carotid Artery
ICH	Intracerebral Hemorrhages
ICS	Intracranial stenosis
K	Potassium
LA	Left atrium
LAC	Lacunar Stroke
LAD	Left Atrial Diameter
LDL cholesterol	Low Denisty Lipoprotein Cholesterol
LMWH	Low Molecular Weight Heparin
LV	Left Ventricular
MCA	Middle Cerebral Artery
Mg	Magnesium
MMD	Moyamoya Disease
MRI brain and MRA	Magnetic Resonance Imaging And Magnetic Resonance Angiography
MRS	Modified Rankin Score
Na	Sodium
NIHSS score	National Institutes of Health Stroke Scale Score
NS	Non Significant
OC	Oral Contraceptives
OCSP	Oxford Community Stroke Project Classification
OR	Odds Ratio

List of Abbreviations

PAC	Partial Anterior Circulation Stroke
PAN	Polyarteritis Nodosa
PCA	Posterior Cerebral Artery
PMT	Postmenopausal hormonal therapy
POC	Posterior Circulation Stroke
QL	Quality of Life
S	Significant
SH	Subarachnoid Hemorrhages
SLE	Systemic Lupus Erythematosus
SSS	Scandinavian Stroke Scale
TAC	Total Anterior Circulation
TAG	Triacyl Acyl-Glycerol
TIA	Transient Ischemic Attacks
TOAST	Trial of Org 10172 in Acute Stroke Treatment
tPA	Tissue Plasminogen Activator
UFH	Un-Fractionated Heparin
VTE	Venous Thrombo Embolism

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Introduction

Stroke now ranks as the second leading cause of death and the first cause of morbidity allover the world. Among all the neurological diseases of adult life, stroke clearly ranks first in frequency and importance, at least 50% of the neurological disorders in a hospitalized patients are of this type (*Norrving and Lowenhielm, 1988; Warlow, 1991; Adams and Brambilla, 1996*). The majority (87%) of strokes are ischemic (IS), with the remainder hemorrhagic (10% intracerebral [ICH] and 3% subarachnoid [SAH] (*Go et al., 2013*).

Stroke has a large negative impact on society, with women disproportionately affected. An estimated 6.8 million (2.8%) of people in the United States are living after having had a stroke, including 3.8 million women and 3 million men. In the United States, more than half (53.5%) of the estimated 795 000 new or recurrent strokes occur among women annually, resulting in $\approx 55\,000$ more stroke events in women than men. Moreover Stroke is the fifth-leading cause of death for men, but the third leading cause for women (*Go et al., 2013*).

The burden of stroke in women was often underestimated, and after being considered primarily a disease of men, stroke is currently emerging as a major public health problem for women as well. Males have a higher incidence of strokes, but the absolute burden of stroke is greater in females, and is likely to rise (*Lewsey et al., 2009*) as women have a higher life time risk of stroke than men (*Seshadri et al., 2006*), which may be

explained in part by women's increased life expectancy, with a higher incidence of stroke in women at older ages (***Dearborn et al., 2009 ;Petrea et al. 2009***).With an anticipated increase in the aging population, the prevalence of stroke survivors is projected to increase, particularly among elderly women (***Reeves et al., 2008***).

Women have a one in five chance of having a stroke during their lifetime. Although the majority of strokes occur in the oldest age groups, younger women have unique risks during their child bearing years because of pregnancy, preeclampsia, and the use of oral contraceptives. Fortunately, the absolute risk of stroke in these young women is low, but a history of preeclampsia during pregnancy or postpartum may be an indication of risk that carries over into later years after childbearing. Early identification of stroke risk in women will help to minimize the effect of the stroke epidemic in older women (***Bushnell et al. 2008***).

Risk factors which are unique to women are reproductive factors, and those that are more common in women, including migraine with aura, obesity, metabolic syndrome, and atrial fibrillation (AF) (***Go et al., 2013***).

Several studies showed gender differences in risk factor profile (***Gall et al., 2010***), and there is now increasing evidence that gender, not only influences stroke presentation and severity (***Rei et al., 2008; Petrea et al., 2009***), but also the choice and response to therapy (***Smith et al., 2009; Howard et al., 2009***). Studies have shown that females are less likely to be treated

with thrombolytics (*Gargano et al., 2008; Reeves et al., 2009; Sacco et al., 2009*), and it has been recognized that the efficacy of intravenous thrombolysis may be higher in females than males (*Sacco et al., 2009*). The reasons for the gender differences is multifactorial and a subject for many researches (*Go et al., 2013*).

The higher stroke mortality for women is often attributed to the longer life expectancy of women (*Go et al., 2013*).

Despite the high incidence of stroke in Egyptians (0.21%), there were no formal studies of the distribution of vascular occlusive disease in Egyptian populations (*Abdulghani and Etribi, 2003*).

The best approach to reduce the burden of stroke remains prevention. The large majority of epidemiological data available focus only on western countries. A better knowledge of stroke patients characteristics in Middle East and African communities will help to promote tailored campaigns by health care authorities and medical societies (*Fawi et al., 2009*).

Based on the the forementioned observations, we sought to determine gender differences in risk factors, clinical severity, type, site and size of stroke among our patients with acute stroke.