PREDICTORS OF ISCHEMIC STROKE AFTER TRANSIENT ISCHEMIC ATTACK

Thesis

SUBMITTED FOR PARTIAL FULFILMENT OF MASTER DEGREE IN NEUROPSYCHIATRY

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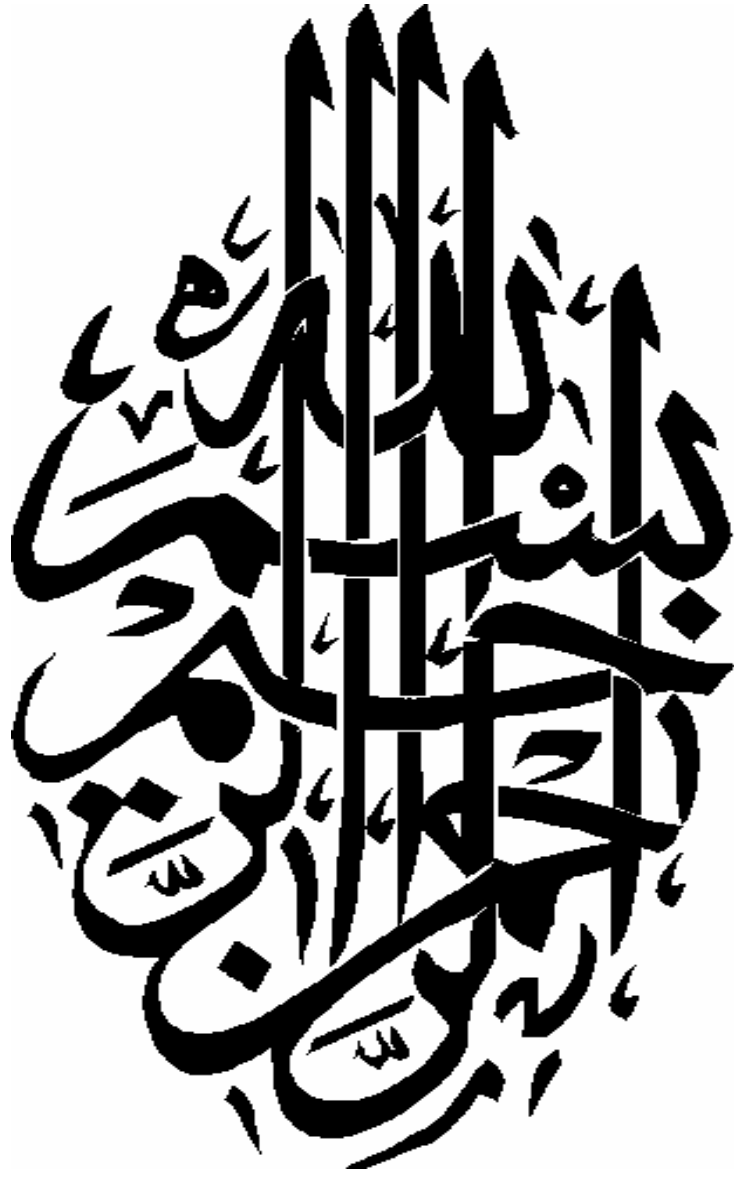
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سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ
الْحَكِيمُ

صدق الله العظيم (سورة البقرة آية 32)

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ABSTRACT

Background: Patients with transient ischemic attack (TIA) are generally clinically unstable, with fear of developing a handicapping stroke. Identification of those at highest and lowest risk of stroke in the first days and weeks after a TIA would allow appropriate use of costly secondary prevention strategies.

Objective: Incorporation of a clinical scoring system, neurovascular imaging, and MR-DWI to help predicting risk of developing an ischemic stroke following a TIA.

Subjects and Methods: A prospective observational study conducted on 25 patients with TIAs, 64% were females and 26% were males, with a mean age of 57.12 ±10.36. Patients were assessed clinically and an ABCD^2 score was proposed. Patients have undergone Diffusion weighted imaging (DWI), within 24 hours from the event, and intra- and extra cranial duplex. Patients were followed up at intervals of 1 week, 3 months, 6 months and 1 year.

Results: Six patients (24%) developed stroke on their follow up, most of them had their strokes within the first 3 months (66.7%), and had an initial ABCD^2 score of ≥4. The development of stroke was associated with the presence of significant extra and/or intracranial vessel disease assessed by duplex (P=0.006) and the presence of acute lesions on their DWI (P=0.035).

Conclusion: Incorporation of brain MR-DWIs and neurovascular imaging together with the ABCD^2 score improves prediction of ischemic stroke following TIA.

Key words: Transient ischemic attack, ABCD2 score, neurovascular imaging, diffusion weighted image (DWI), stroke risk.

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LIST OF ABBREVIATION

List of Abbreviation	
TOAST	Trial of Org 10172 in Acute Stroke Treatment.
TIA	Transient ischaemic attack
CT	Computed tomography
MRI	Magnetic resonance image
MCA	Middle cerebral artery
ACA	Anterior cerebral artery
PCA	Posterior cerebral artery
BMI	Body mass index
LDL	Low density lipoprotein
TG	Triglycerides
WHO	World health organization
CE	Carotid endarterectomy
LAA	Large artery atherosclerosis
LAD	Large artery disease
CBF	Cerebral blood flow
RIND	Reversible ischemic neurological deficit

CVA	Cerebrovascular accident
CI	Cerebral ischemia
HR	Hazard ratio
PFO	Patent foramen ovale
SSAD	Severe symptomatic arterial disease
CTA	Carotid ultrasound\Transcranial doppler
CUS\TCD	Computed tomography arteriography
MRA	Magnetic resonance arteriography
PET	Positron emission tomography
MES	Micro embolic signal
AF	Atrial fibrillation
IHD	Ischemic heart disease
HTN	Hypertension
IMT	Intima-media complex thickness
PSV	Peak systolic velocity
EDV	End-diastolic velocity
CCA	Common carotid artery
ICA	Internal carotid artery

ECA	External carotid artery
TCCS	Transcranial Color Coded Doppler Ultrasonography
BA	Basilar artery
VA	Vertebral artery
GE	General electric
SD	Standard deviation
P VALUE	Probability value
SPSS	Statistical Package for the Social Science
TACI	Total anterior circulation impairment
PACI	Partial anterior circulation impairment

Introduction

INTRODUCTION

Transient ischemic attack (TIA) is a disorder where sudden onset of focal or global neurological symptoms last less than 24 hours and is attributed to transient decrease in the blood supply *(Kimurak et al., 1999)*, a new definition has been developed by National Stroke Association (2002) which referred to TIA as a brief episode of neurological dysfunction caused by focal brain or retinal ischemia with clinical symptoms lasting typically less than one hour without evidence of acute infraction. Patients with TIA are generally clinically unstable, with risk of having a stroke within 90 days after a TIA, half within the first 2 days *(Kleindorfer, et al 2005).*

Identification of those at highest and lowest risk of stroke in the first days and weeks after a TIA would allow appropriate use of costly secondary prevention strategies, including hospital admission *(Hankey and Warlow, 1992; Johnston, 2002; Nguyen-Huynh and Johnston, 2005).*

At present, 3 prognostic scores for short-term risk of stroke after TIA have been proposed: the California score3, the ABCD score and a hybrid of these 2 called the ABCD2 score. These scores rely on summation of points based on clinical factors *(Cucchiara et al., 2006).*

Further, emerging data suggest a role for brain and vascular imaging in risk stratification *(Cucchiara and Ross., 2008).*

The presence of symptomatic large vessel disease appears to be associated with a high short-term risk of stroke. Carotid and transcranial ultrasonography is used to identify patients with large vessel disease *(Eliasziw et al., 2004).*

Patients with a diffusion-weighted magnetic resonance imaging lesion represent a high-risk group *(Redgrave et al., 2007).*

Aim of the Work