Epidemiology of Stroke in Sohag; Hospital Based Study

Thesis

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in Neuropsychiatry

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بسم الله الرحمن الرحيم

﴿وقُل رَّبِّ زِدْنِي عِلْماً﴾

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Mohammad Ibrahem Ahmed Abd AlRahem

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List of Abbreviations

AMI	:	Acute myocardial infarction
BIMC	:	Beth Israel Deaconess Medical Center in Boston
BMI	:	Body mass index
CAA	:	Cerebral amyloid angeopathy
CBF	:	Cerebral blood flow
DALY	:	Disability-adjusted life year
FHS	:	Fremighame cohort study
NINDS	:	National institute of neurological disorders and stroke
OSCP	:	The Oxford shire Community Stroke Project
PACI	:	Partial anterior circulation infarct
PAR	:	Population attributable risk
PFO	:	Patent foramen oval
POCI	:	Posterior circulation infarcts
RMH	:	Ramos Mejia Hospital
RR	:	Relative risk
SCD	:	Sickle cell disease
TACI	:	Total anterior circulation infarct
TOAST	:	The Trial of ORG 10172 in Acute Stroke Treatment

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Introduction

From the historical point the word “stroke” was firstly introduced into medicine in 1689 by William Cole in A Physico-Medical Essay Concerning the Late Frequencies of Apoplexies. Before Cole, the common term used to describe very acute non-traumatic brain injuries was “apoplexy. Apoplexy was used by Hippocrates circa 400 before Christ. For more than 2000 years, physicians have struggled to define stroke ***(Aho et al., 1980)***.

Stroke is a major cerebrovascular disease threatening human health and life with high morbidity, disability and mortality. According to the data from Global Burden of Disease Studies, worldwide in 2010 there were an estimated 11,569,538 incident ischemic strokes and 5,324,997 events of incident hemorrhagic stroke; furthermore, 2,835,419 individuals died from ischemic stroke and 3,038,763 from hemorrhagic stroke. Stroke is the number cause of the death in several countries such as China ***(Tiotrefis et al., 2012).***

According to the Global Burden of Disease 2010 study, there were 16.9 million people suffering from a stroke each year. In that year, the estimated global incidence of stroke was (258/100.000/year), with marked differences between high income (217/100.000/year) and low income (281/100,000/year) countries. Similar differences have since clearly been shown in contemporary population based registries ***(´Jot et al., 2015).***

Definition was introduced at 1975 and depended on the duration; this was due to no improvement in imaging. Now in the twenty one century the definition was changed and introduced imaging as a second corner stone in the definition. TIA is a brief episode of neurologic dysfunction

caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than one hour, and without evidence of acute infarction ***(Sacco et al., 2013).*** Table (1)

Table (1): Definitions of cerebrovascular attacks

CNS infarction: CNS infarction is brain, spinal cord, or retinal cell death attributable to ischemia, based on 1/ .pathological, imaging, or other objective evidence of cerebral, spinal cord, or retinal focal ischemic injury in a defined vascular distribution; or 2/ .clinical evidence of cerebral, spinal cord, or retinal focal ischemic injury based on symptoms persisting ≥24 hours or until death, and other etiologies excluded. (Note: CNS infarction includes hemorrhagic infarctions, types I and II
ischemic stroke: An episode of neurological dysfunction caused by focal cerebral, spinal, or retinal infarction. silent CNS infarction: Imaging or neuro-pathological evidence of CNS infarction, without a history of acute neurological dysfunction attributable to the lesion. intracerebral hemorrhage: A focal collection of blood within the brain parenchyma or ventricular system that is not caused by trauma. (Note: Intracerebral hemorrhage includes parenchymal hemorrhages after CNS infarction, types I and II stroke caused by intracerebral hemorrhage: Rapidly developing clinical signs of neurological dysfunction attributable to a focal collection of blood within the brain parenchyma or ventricular system that is not caused by trauma. **Silent** cerebral hemorrhage: A focal collection of chronic blood products within the brain parenchyma, subarachnoid space, or ventricular system on neuroimaging or neuro-pathological examination that is not caused by trauma and without a history of acute neurological dysfunction

attributable to the lesion.

Subarachnoid hemorrhage: Bleeding into the subarachnoid space (the space between the arachnoid membrane and the pia mater of the brain or spinal cord).

Stroke caused by subarachnoid hemorrhage: Rapidly developing signs of neurological dysfunction and/or headache because of bleeding into the subarachnoid space (the space between the arachnoid membrane and the pia mater of the brain or spinal cord), which is not caused by trauma.

Stroke caused by cerebral venous thrombosis: Infarction or hemorrhage in the brain, spinal cord, or retina because of thrombosis of a cerebral venous structure. Symptoms or signs caused by reversible edema without infarction or hemorrhage do not qualify as stroke.

Stroke, not otherwise specified: An episode of acute neurological dysfunction presumed to be caused by ischemia or hemorrhage, persisting ≥24 hours or until death, but without sufficient evidence to be classified as one of the above.

(Sacco et al., 2009)

Indeed neuroimaging studies, especially using MRI, on stroke patients and people without a prior history of stroke have revealed silent cerebral infarction and/or silent hemorrhage, which are five times more common than stroke with symptoms ***(Deepadarshan et al., 2016).***

Stroke is the third leading cause of death after ischemic heart disease and cancer in many developed countries and it is one of the most important causes of long hospital admission and long term disability in the most industrialized populations and developed world. It causes a major financial burden on medical health care; it also causes extensive human and family prolonged functional

disability and associated mortality ***(El-Tallawy et al., 2013)***.

In neurological disorders; the CVS represents the great percent of diseases admitted to the hospitals which is (58.5%) then inflammatory diseases of CNS, disorders of spinal cord and root and epilepsy ***(Alain et al., 2017).***

In the African country Nigeria; many studies were don over 3 years reported that; stroke was the commonest. It accounts for 50.4% of cases admitted in hospitals, the second disease was CNS infection (14.2%) while myelopathies represented (8.1) followed by epilepsy. Also in the city of Ojini the hospital based study found that CVS was the commonest neurological disease (50%) then infection of CNS (25%) ***(Dayna et al., 2011).***

500 people per 100,000 are currently living with post stroke consequences and it is suggested at 2030, CVS related disability will rank as the 4th leading cause of disability-adjusted life years, relating to the years lost due to illness. It not only alters the lives of those who suffered the stroke but also it influences the lives of the victim's family and loved ones as well as caregivers it also influence the psychiatric state namely the mood ***(Kalafu et al., 2000).***

According to World Health Organization (WHO) estimates, in 2002, 5.5 million people died of stroke in 2002 and roughly 20% of these deaths occurred in South Asian Countries which are overcrowded and ideal developing countries (India, Pakistan, Bangladesh, and Sri Lanka) The incidence and mortality of stroke increase with age, and as the elderly population is rapidly growing in most developed countries ischemic stroke is a common societal burden with substantial economic costs.

Hemorrhagic stroke is more prevalent in the developing countries ***(Fredriksson et al., 1992).***

The Imaging in all cases with a clinical picture of acute cerebrovascular stroke is an important topic to all emergency physicians, neurologists, neurosurgeons and neuro-radiologist. The American College of Radiology (ACR) continually updates its guidelines for imaging pathways through the ACR Appropriateness Criteria ***(American College of Radiology, 2009).***

Non-contrast head CT is the first-line imaging test for acute stroke patients to rule out intracranial hemorrhage and large infarct. When possible, CT angiography should be the next imaging study after IV-tPA administration in acute stroke patients to evaluate for large-vessel occlusion. Core infarct volume demonstrated by DWI has been shown to predict outcomes in stroke patients, with core infarct volume more than 70 mL indicative of poor outcomes even with thrombectomy. The importance of the ischemic penumbra in acute stroke has been demonstrated ***(Michael et al., 2017).***

Confirmation of location of CNS hemorrhage, i.e., intra-cerebral, intra-ventricular, subarachnoid, intra-spinal or retinal, is available. Under the circumstance, stroke mimics can be reliably excluded. Depending on thoroughness of investigations, the underlying etiology may be elucidated or assumed from the known history of vascular risk factors. Hemorrhagic stroke can be a complication of ischemic stroke especially following acute revascularization ***(Mudassir et al., 2010)*.**

Aim of the study

Aim of the current study is to investigate the clinical characteristics of cerebrovascular stroke; hemorrhagic and ischemic types in Sohag government hospitals including; risk factors, types and short term prognosis.