

# Updates on Urgency of Treating Stroke

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## ABSTRACT

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## Introduction

It is a proof of concept that time is muscle in treating myocardial infarction and even if for any reason you missed the boat in timely management of heart attack, we postulate that probably you might have a second chance which is heart transplant if patient meets the requirement, and this is not an excuse for not treating the heart attack very urgently [1]. The situation in stroke is more serious and more urgent [2] as you need to exclude stroke mimics in a very short time to make a therapeutic decision, in a large vessel stroke [middle cerebral artery stroke]. There is a loss of 2 million nerve cells per each minute delay [3] which is correlated with loss of 1.8 days of healthy life [3], After saucerful treatment of heart attack you can still run a marathon in contrast of stroke that you might need to lose few brain cells to be in a vegetative state. Most of strokes are ischemic, around 80%, less than 15% are hemorrhagic, and less than 2% are venous stroke (cortical or cerebral venous stroke) [4]. Treatment of each type of stroke is quite different, and all types of strokes is emergency and needs to confirm the diagnosis.

## Mini Review

In this review, I am going to discuss the updates of investigation and specific physical signs and symptoms which help to reach a correct diagnosis in a very short time, and initiate urgent treatment. Firstly, diagnosis of stroke and ruling out stroke mimics is of para-amount importance, Seizure, manganous Aurea, cardiogenic and metabolic syncope, encephalitis, demyelination, infective endocarditis and embolic stroke, metabolic encephalopathy, need to be ruled out some tips to exclude mimics.

- a) Seizure, loss of consciousness, patient can't remember what happened, post ictal state, Shaking, bite on the lateral side of the tongue, if patient has history of seizure, usually most seizure is stereotyped, patient can have Todd's paralysis which usually resolve in few hours [5].
- b) Migranous Aurea, history of migraine, fortification spectra, Aurea could be in language and pronunciation, sensory, motor, usually it is slowly progressing, each one modality happened in one time then followed by another modality, patient could have nausea [6], patient with basilar migraine might have ptosis or Horner syndrome [7].
- c) Syncope, quite sudden, patient loses his consciousness, medical history usually includes cardiac problems, familial history of cardiac syncope or sudden death (familial cardiomyopathy, Q-T syndrome).
- d) Loss of consciousness usually last for seconds, if it is more than few minutes, other diagnosis should be considered [8], most of these patients have car accidents during syncope.
- e) Transient Global Amnesia, it is sudden, temporary episode of memory loss, recall of recent events vanishes, sometimes patient can't remember anything about the event and keeps asking same questions [8].
- f) Encephalitis, usually patient will be confused and have diseases or sepsis underlying problems like chronic liver disease, respiratory failure, brain infection.

g) Demyelination, crescendo is slowly, commonly affecting females, usually resolve in few days, could be manifested as a flare of multiple sclerosis or could be precipitated by infection, if associated with infection, clinician should treat the infection and not to give methyl prednisolone [9].

Sometimes confirming the diagnosis of stroke will be difficult, here we are presenting other tools which help the diagnosis of stroke and the pathology of stroke to help starting an early treatment.

1. The definition of TIA as clinical symptoms which last less than 24 hours is outdated [10] because MRI can confirm a diagnosis of stroke even if the clinical symptoms last less than 60 minutes [11].

2. Restriction diffusion in DWI can diagnose stroke even after one minute of having the symptoms and cytotoxic oedema can be confirmed by ADC [12].

3. Biomarkers in Ischemic Stroke, S100B and specific enolase are proteins measured from serum and correlate very well with the volume of stroke 24-27 hours [13]. As we treat ischemic stroke with Alteplase [single chain recombinant tissue plasminogen activator] in therapeutic window which is four and half hours, CT perfusion and CTA are a standard of care in Australian hospitals which usually show the volume of infarct tissue (core) and the volume of hypo perfused region that can be salvageable with reperfusion(penumbra), even the severely hypo perfused region with good collateral below the occluded vessels, still have a high chance of reperfusion [13]. More than third of stroke are excluded from lysis because of the unknown time of symptoms. It became a best practice in Australia to consider the mismatch between DWI-Flair Mismatch.

Is a surrogate marker of the time of onset of stroke [14] specially in wake-up stroke?. Endovascular therapy is a standard of care for proximal large vessel occlusion, therapeutic window is up to 12 hours [15]. Venous stroke is an emergency, it affects mostly females, usually presented with seizure, decreased level of consciousness due diffuse encephalopathy, signs of increased intracranial pressure, headache, cranial nerve palsy, It is underdiagnosed because of the rarity of the stroke.

## Predisposing Factors

Female gender, contraceptive pills, dehydration, inherited thrombophilia, myeloproliferative diseases, Rare diseases such as paroxysmal nocturnal hemoglobinuria. Helpful serum markers are positive D dimer, Uncontracted CT shows dense clot sign in cerebral vein or sinus, CT venogram is diagnostic. Due to increased intracranial tension, CT might show cerebral oedema, mass effect and intracranial hemorrhage which can progress to subarachnoid hemorrhage and massive hemorrhagic infarction [16]. Treatment

is mainly anticoagulation, patients who do not respond to anticoagulation, treatment should be escalated to endovascular thrombolysis [17]. Hemorrhagic stroke is a life-threatening emergency, usually patient manifest with decline in consciousness and very mild neurological loss, seizure and signs of intracranial hypertension. Mortality is high in the first 90 days. Types of hemorrhagic stroke either lobar hemorrhage due to amyloid angiopathy, hypertensive bleed in Basal ganglia, hypothalamus and brain stem, subarachnoid hemorrhage due to ruptured Aneurysm, anticoagulation, AVM misinformation, cocaine abuse CTA is diagnostic as it shows Spot sign which is marked attenuation due to active bleed [18]. There is no definite cure of hemorrhagic stroke, patient should be managed in ICU to observe and treat seizures, intracranial hypertension, systolic hypertension with aim under 140. Treating fever, sepsis, hyperglycemia, endovascular treatment for ruptured aneurism, Reversing anticoagulation, prophylaxis for thrombosis with pneumatic compression in the first few days followed by low molecular weight heparin, craniectomy for evacuation of Hematoma, external ventricular drain for intraventricular hemorrhage causing hydrocephalus [19].

## Conflict of Interest

There is no conflict of interest.

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