

The changing face of transient ischaemic attacks

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Abstract

A transient ischaemic attack (TIA) is a major warning of an impending stroke. The risk of recurrent TIA or stroke is highest during the first 24 hours. 80% of recurrence risk is reduced with early initiation of effective treatment.

Many things have changed regarding TIAs over the last decade. The definition of TIA has changed from a time-based to a tissue-based one. Strategies for investigation and treatment have changed, with specialist evaluation and management recommended for all TIAs within 24 hours of symptom onset. Dedicated TIA clinics have revolutionized the approach to TIA management.

Improving awareness on early recognition and establishing pathways for rapid delivery of optimal care for TIAs will go a long way in minimizing the burden of stroke in Sri Lanka.

Key words: transient ischaemic attacks, stroke, prevention, NICE 2019 guidelines, Sri Lanka

TIAs predict stroke risk

A transient ischaemic attack (TIA) is not a simple 'mini-stroke', but a major warning sign of an impending stroke that demands urgent attention. About 15-30% of all ischaemic strokes are preceded by TIAs¹⁻⁴. The estimated recurrent TIA and stroke risk at three months after a TIA is 17.3%¹; the risk of stroke is greatest immediately after a TIA, providing only a short window of opportunity for stroke prevention². 52% of all strokes during the first 7 days and 42% of all strokes during the first 30 days following a TIA do occur within the first 24 hours²⁻⁵. Early and optimal treatment of TIA has been shown to be effective in prevention of recurrent

TIA and stroke. An 80% reduction of recurrent TIA and stroke risk was reported with the early initiation of existing standard treatments of TIAs and minor strokes (EXPRESS study, 2007)⁶.

TIA: many things have changed

The definition of TIA has changed

TIAs were traditionally defined as focal neurologic symptoms and/or signs of sudden onset and lasting less than 24 hours, due to transient decrease in blood flow to the brain. However, with significant advances in the understanding of pathophysiology of TIAs and increased availability of advanced neuroimaging techniques, the definition of TIA has changed from a time-based to a tissue-based one. The need for a tissue-based definition was felt with the realization that 30-50% of classically defined TIAs show brain infarctions on diffusion-weighted MRIs, especially those lasting more than 60 minutes⁷⁻⁹. TIA is now defined as a transient episode of neurological dysfunction caused by central nervous system ischaemia without acute infarction⁹. The new definition of TIA, however, is not widely practised as it requires MRI imaging which is not routinely available in many clinical settings.

Evaluation of TIA has changed

Strategies for investigation and treatment of TIAs vary with the risk of recurrent TIA or stroke following the incident event. Therefore, several scoring systems were developed and updated to predict the short-term recurrent TIA and stroke risk following a TIA^{4,10,11}. The ABCD2 score is one of the most widely used scoring systems¹¹. It stratifies patients into three different risk groups; low (<4), moderate (4-5), and high (6-7) risk indicating a 2-day stroke risk of 1%, 4% and 8% respectively¹². However, recent studies have highlighted

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several limitations of the ABCD2 score, especially lack of specificity in detecting recurrent TIA or stroke. A recent meta-analysis has shown that an ABCD2 score of ≥ 4 has 87% sensitivity but only 35% specificity in predicting a recurrent TIA or stroke within first 7 days of a TIA¹³. Several modifications to the ABCD2 score have produced revised scores with improved predictive value, e.g. addition of neuroimaging data on brain infarction (ABCD2I score)¹⁴, addition of aetiology, and DWI-positivity on MRI (ABCDE \oplus score)¹⁵. However, these modifications require imaging data which is not freely available especially in developing countries. The National Institute for Clinical Excellence (NICE) of the UK, in its recent (May 2019) revision to the guidelines on assessment and management of TIAs, recommends not to use risk scores to guide management¹⁶. This is a marked shift from the current practice worldwide and acknowledges the limitations of the risk stratification scores. The NICE recommendations emphasize the importance of considering all TIAs as high risk deserving urgent attention.

Management of TIA has changed

Recent evidence suggests that urgent assessment and treatment leads to reduction of stroke risk. The patient populations in whom TIAs were managed based on the rapid evaluation and treatment strategies used in the EXPRESS study have reported much lower stroke risks^{17,18}. The risk of recurrent stroke at 90 days has been shown to decrease from 12-20% to 3.7% within the short span of one decade (from 1997/2003 to 2009/2011)^{6,17}, and this is believed to be due to the implementation of rapid and optimal recurrent stroke or TIA prevention strategies in current practice. Dedicated specialist TIA clinics have been developed in many countries to meet this need for rapid assessment and management of TIAs¹⁹⁻²¹. Specialist evaluation and management of all TIAs within 24 hours of symptom onset is now recommended¹⁶. This, again, is a change from the existing strategy of referring only high-risk TIAs for evaluation within 24 hours^{16,22}.

Early optimal medical treatment of index event is the cornerstone of prevention of recurrent stroke or TIA. Aspirin is the preferred antiplatelet agent, and all patients are recommended immediate treatment with aspirin 300 mg/d^{16, 22, 23}. The combination of aspirin and clopidogrel is widely used based on findings from some recent studies²⁴⁻²⁷, but the duration of clopidogrel use is unclear. Addition of clopidogrel 75 mg/d for a short term (21-30 days) is considered better than intermediate term (<3 months), as it gives the same benefit as intermediate term with lower bleeding risk^{22,28-34}.

Long term (>3 months) dual antiplatelet therapy with aspirin and clopidogrel is not recommended due to increased risk of major bleeding as well as excessive all-cause mortality²⁸. However, it is important to note that the combination of aspirin and clopidogrel is not recommended in the new NICE guidelines, and aspirin is the only recommended antiplatelet agent¹⁶. Anticoagulation is advocated for those with cardiogenic embolism^{16,22}.

Vascular risk factor modification is crucial in stroke prevention following TIA. Blood pressure should be controlled to <140/90 mmHg in all and <130/80 mmHg in patients with diabetes²². Intensive lipid-lowering therapy with statins is advised in patients with low-density lipoprotein cholesterol (LDL-C) >100 mg/dL²². Patients should be screened for diabetes mellitus with FBS or hemoglobin A1c and treated accordingly to achieve a FBS of <126 mg/dL. Lifestyle modification with smoking cessation, healthy diet, exercise and limiting alcohol consumption are essential²².

Urgent evaluation is also needed as the aetiology of TIAs is heterogeneous, and the risk of stroke following TIAs differs with the aetiopathology of the index event³⁵. Most TIAs result from large artery atherothrombosis (30-40%) or cardiogenic embolism (15-20%)³⁶, and the risk of early recurrent stroke is considered highest in those with large artery atherothrombosis³⁷. Early evaluation, therefore, should include imaging of the extracranial cerebral arterial system (doppler ultrasound, CT or MR angiography) and a search for cardiac sources of embolism (ECG, echocardiogram)^{38,39} as priorities in addition to routine blood investigations for risk factors^{36,40}. 24-hour or extended Holter monitoring and prolonged cardiac rhythm monitoring (30 days) is recommended where paroxysmal atrial fibrillation is suspected²². Early carotid imaging is of critical importance as the benefits of carotid surgery are maximal if surgery is done within 2 weeks of the index event^{22,41-43}.

How can we improve TIA management and prevent strokes in Sri Lanka?

Stroke is a significant burden in Sri Lanka. It is the fourth leading cause of hospital deaths⁴⁴ and is a significant cause of disability. Effective acute treatments such as thrombolysis and mechanical thrombectomy are not freely available in the country, and facilities for rehabilitation of disabled patients are extremely limited. Stroke prevention, therefore, is the most cost-effective strategy for minimizing the stroke

burden in Sri Lanka⁴⁵; 80% of early recurrent stroke could be prevented by early treatment of TIA or minor stroke⁶.

Early recognition and initiation of treatment of TIAs is a key component in this strategy. However, awareness of TIA among Sri Lankan first contact doctors has been shown to be inadequate⁴⁶, and there is no data on awareness of TIA among the Sri Lankan public. Education of patients and their relatives regarding symptoms of TIAs and the importance of seeking early medical treatment is important. In addition, updating knowledge of first contact doctors on diagnosis of TIA, emergency treatment and timely referral for specialist opinion is essential. It is important to emphasize that patients and doctors should not be lulled into a false sense of security by the early resolution of symptoms.

Sri Lanka needs to establish dedicated fast track clinics for urgent assessment and management of TIAs, following the benefits demonstrated in other countries^{6,20,47-49}. The success of a TIA clinic depends on several factors including fast track access (i.e. appointments made within 24 hours for all patients)⁴⁸⁻⁵², assessment by a specialist interested in TIA/stroke⁵³⁻⁵⁶, rapid access to diagnostic investigations, multidisciplinary care^{21,57} and availability of educational programs^{57,58}. Importantly, a TIA clinic is a low-cost effective intervention that can be deployed in any centre in Sri Lanka providing specialist care. Starting island wide stroke/TIA awareness campaigns (such as the FAST campaign)⁵⁹ is a timely need. 'FAST' (unilateral Facial weakness, Arm weakness, Speech difficulty) is an easy way for the public to remember and identify the most common symptoms of a stroke or TIA⁵⁹ and emphasizes the importance of Time in seeking medical attention. Lack of relevant data from Sri Lankan settings is a hindrance to the development of effective preventive strategies, and more research data is needed regarding the incidence, presentations, risk factors and outcome of TIAs in the country.

Conclusion

Many things have changed regarding TIAs over the last decade: its definition, diagnosis, assessment and management. TIA has now evolved into a condition requiring emergent care, and recent evidence from other countries point to the success of this approach. Developing pathways for such rapid evaluation and treatment of TIAs would go a long way in minimizing the burden of stroke in Sri Lanka.

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