

Life after stroke and transient ischaemic attack

Transient ischaemic attack affects approximately 35 people per 100,000 of the population per year and is associated with a high risk of stroke in the first month of the event and up to a year afterwards. There is now considerable debate regarding how the life of a patient is affected after a TIA diagnosis.

Heddwyn Ellis F1, Nevill Hall Hospital Brecon Road, Abergavenny

Tanvir Ahmed Specialist Registrar, Nevill Hall Hospital Brecon Road, Abergavenny

Pradeep Khanna Consultant Physician, Nevill Hall Hospital Brecon Road, Abergavenny

email: ahmedte1000@hotmail.com

The definition of Transient ischaemic attack (TIA) has evolved over the past two decades. For instance in 1990, the National Institute of Neurological Disorders and Stroke defined TIA as “an acute loss of focal cerebral or ocular function with symptoms lasting less than 24 hours.”¹ However, in 2009 this definition was changed to “a transient episode of neurologic dysfunction caused by focal brain, spinal cord, or retinal ischemia that lasts less than one hour without acute infarction.”² This development in the recent definition of a TIA was driven by advances in neuroimaging, which allows very early identification of ischaemic brain injury.³ Most notably, this new definition puts a question mark over the ‘T’ in TIA because although the neurological symptoms might be transient, the tissue injury may be permanent.

Stroke risk

TIA affects approximately 35 people per 100,000 of the

population per year and is associated with a very high risk of stroke in the first month of the event and up to a year afterwards.⁴

The Oxford Vascular Study has measured this risk as 8% at seven days, 11.5% at one month, and 17.3% at three months. Another study found the risk of stroke within 10 years of an initial TIA to be 18.8%.⁵ A TIA is therefore a matter of clinical urgency and this has been reflected by the implementation of a scoring system for the short-term risk of having a stroke using

the ABCD2 system.⁶ If patient scores ≥ 4 they should be seen in TIA clinic within 24 hours.

Prevalence

Stroke has been described as “the major neurological disease of our times.” Each year in England, approximately 110,000 people have a first or recurrent stroke and a further 20,000 people have a TIA. Moreover, 900,000 people in England are living with the effects of stroke, with half of these being

Key points

- A TIA is described as “a transient episode of neurologic dysfunction caused by focal brain, spinal cord, or retinal ischemia that lasts less than one hour without acute infarction.”
- There is now considerable debate regarding how the life of a patient is affected after a TIA diagnosis.
- Post-stroke depression has been identified as a strong predictor of reduced quality of life.
- A study found that after six month follow up, 29% of patients with TIA reported fatigue and 56% of stroke patients.

dependent on other people for help with everyday activities.⁴ Stroke accounts for 11% of all deaths in England and Wales.⁴ Due to its significant morbidity, its burden on the NHS is immense — costing £2.8 billion each year.⁶ With an increasing older population with a greater risk of cardiovascular disease, this would undoubtedly further increase the burden.

Management

The treatment and management of TIA and stroke has improved and developed significantly over the past two decades. More patients are being treated in specialised stroke units and there are reductions in mortality and length of hospital stay. In accordance with the NICE guidelines suspected TIA patients are now assessed by a specialist within one week — daily TIA clinics have made this possible. Such patients are prescribed the appropriate life-long medication, given advice on how to lower risk factors for a further event and then discharged. The improvements are largely the result of studies and audits, which have provided us with guidance on how best to manage this condition.⁷

Symptoms

The symptoms (both physical and psychological) and long-term management of stroke patients outside of hospital has also undergone much research. Extensive research has been undertaken on post-stroke depression, which has a prevalence estimated to be as high as 60%.⁸ TIA symptoms and signs are generally

considered to have resolved within an hour, it is often thought that quality of life is not affected in the long term. Nevertheless, TIA is very closely related to stroke; they are likely to have similar psychological complications.

Quality of life

The World Health Organisation (WHO) defines Quality of Life (QoL) as “individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.” Therefore QoL not only incorporates an individual’s physical health, but also their psychological state which is greatly influenced by their social relationships, personal beliefs, perceived level of independence, and their relationship with the environment in which they live.⁹ This notion was confirmed by a Finish study that showed that stroke patients with little or no physical dysfunction can experience a compromised QoL. Psychological factors appear to be as important as physical disability in determining QoL.¹⁰ These psychological factors tend to be driven by the patient’s self-perception of their own condition, rather than their actual health status,¹¹ and this can be measured using the SF-36 Health-related quality of life (HR-QoL) questionnaire.

Questionnaires

The SF-36 is a valid instrument to describe health perception in eight domains (physical functioning, physical role limitation, emotional role limitation, social functioning, mental health, vitality, pain and general health).¹⁰ It has been used numerous times to assess stroke

patients and there are published results that include TIA patients. The outcome of the surveys seem to be constant; HR-QoL deteriorates even though neurologic function and disability remains stable.¹¹ These surveys have been done at follow-up ranging from one year to 15 years therefore the effect on quality of life is long-term.^{10–12} However, due to presumed lack of residual impairment or disability these patients often receive no rehabilitation care. This is despite research showing a decline in QoL and literature stating that almost all patients who have had a cerebrovascular event report problems such as fatigue, anxiety and poor memory.⁵ Clearly, there is a need for adequate counselling and long-term care for these patients.

Depression after TIA

Quality of life is highly influenced by mood; indeed post-stroke depression has been identified as a strong predictor of reduced QoL.¹¹ Depressive symptoms are very common after stroke, which may limit social functioning and ability to carry out activities of daily living (ADL).¹³ TIA patients have also shown high rates of depression.¹⁴ Three separate studies have demonstrated depression post-TIA ranging from 26% to 38%.^{10,15,16} There is an argument that these high rates of depression are the result of vascular deficiency to areas of the brain that regulate mood; a concept known as “vascular depression,”¹⁶ rather than a result of receiving a diagnosis of TIA. However, whatever the aetiology, depression post-TIA exists and must be addressed. This can only be achieved by increased awareness and recognition of

depression by non-psychiatric healthcare providers of TIA patients — enabling prompt treatment has important implications for patient quality of life.¹⁷

Effect of TIA on employment

It is estimated that one fourth of strokes occur in people of working age ie. those below 65 years.¹⁸ Return to work in post-stroke patients is reported to be between 19% and 73%.¹⁹ After a TIA, patients are unable to drive for at least one month, which could have significant consequences with employment. Economic difficulties are thought to affect 24% to 33% of stroke sufferers of working age.¹⁸ A significant proportion of TIA patients are also of working age with an annual incidence rate of 0.92 per 1000 population in the age range between 55 and 64 years.²⁰ Although a TIA does not produce major disability, it would be interesting to find out whether it has any effect on the working patient's employment. To date there has been no study examining this.

Fatigue after TIA

Fatigue is common after cerebrovascular disease. It can be partially attributable to increased physical efforts associated with neurological deficit, however its presence in those with little or no motor deficit raises the possibility of other factors. A study to determine the extent of stroke specific fatigue looked at patients with minor stroke and TIA who had undergone similar investigation and treatment. The prevalence

of fatigue was assessed using the Chalder fatigue scale. After six month follow up, 29% of patients with TIA reported fatigue and 56% of stroke patients.¹⁵ Further trials have also shown fatigue post stroke but further research needs to be done on fatigue and TIA.

Sexual dysfunction

Sexual dysfunction has been documented post stroke. A stroke is almost never a direct cause of sexual dysfunction, instead there appears to be a time of adaption after the stroke in which sex life is halted. Studies show this is a temporary stage. For instance one study found 80% of men who report sexual dysfunction after stroke regained function spontaneously after a few months.²¹ However some may continue to suffer for longer periods and there are several causes. Fear of stroke due to excitement can lead to dysfunction. One trial showed up to 50% of patients who recover from a stroke then limit sexual activity due to fear of further stroke. In addition, partners report being afraid to initiate sex because of fear that their partner might suffer another stroke. Decreased libido can occur for several reasons including low mood, self esteem and medications (including antidepressants and high blood pressure medications eg. β -blocker). There are no specific studies looking into sexual dysfunction after TIA but depression, low self esteem and fear of stroke can all affect intimacy.

Physical activity

Coronary artery disease and cerebrovascular disease share

many predisposing, modifiable risk factors (blood pressure, lipids, smoking physical inactivity, obesity and diabetes). Lifestyle interventions and pharmacological therapy are recognised as the cornerstone of secondary prevention. Benefits have been shown of programmes incorporating exercise and lifestyle counselling have been shown in numerous studies and cardiac rehabilitation post myocardial infarction is well established. A study from Indiana University in Bloomington studied 14 post-TIA patients who participated in a six-week cardiac rehabilitation program. They observed a clinically, but not statistically, significant mean reduction in blood pressure (8.71mmHg systolic and 7.18mmHg diastolic) and statistically significant improvements in gait speed and endurance.

A trial looked at patients who were hospitalised with TIA or minor stroke with no residual deficit. The patients were given occupational and neuropsychological screening post discharge (4–6 weeks) and therapy was provided when necessary. Results showed 71% were satisfied with care they had received after discharge. Large randomised trials are needed to establish rehabilitation programme in TIA patients.

Effect of TIA on the family

Stroke is known to have a potentially dramatic impact on the patient and their family, who need continuing information and support. One paper proposes that

the mental health of the caregiver is intertwined with the physical and mental health of the patient and therefore stroke care should have a family centred approach with dual focus on both the patient and their carer.²² Indeed, many studies have looked at caregiver burden following stroke and several have identified “amount of time and effort required of the caregiver” as the most important determinant of burden.²³ Significant time and effort would not be required of a TIA carer therefore they shouldn't be greatly affected. However, a study looking at spousal caregivers of minor stroke survivors has discovered that the carers often experience major challenges in the form of re-evaluation of life plans and rethinking of priorities.²⁴ Relationships with family and friends has been nominated as the most important life domain in a QoL study of post-stroke patients therefore this is an important factor to consider post TIA.⁹

Conclusion

TIA is a common cerebrovascular disease that is associated with a high risk for secondary stroke. Over the last decade the diagnosis and acute management have vastly improved. However, more research is needed in the area regarding psychological issues after a TIA diagnosis, such as fatigue, depression, low self esteem, sexual dysfunction. Further trials need to be carried out similar to the cardiac rehabilitation adapted to transient ischemic attack and stroke (CRAFT) study, which is currently taking place.²⁵

Conflict of interest: none declared

References

- Hankey G, Warlow C. (1994) Transient ischaemic attacks of the brain and eye. London: WB Saunders.
- Easton, JD, Saver, JL, Albers, GW, et al. *Stroke* 2009; **40**: 2276
- Up to Date. Definition of transient ischaemic attack; 2009. Accessed 29 January 2010. www.uptodate.com/patients/content/topic.do?topicKey=~lwrcVH7O4fjCbw&view=print
- The Intercollegiate Stroke Working Party. (2008) National Clinical Guidelines for Stroke. Third Edition. London. Royal College of Physicians.
- Clark T, et al. Long Term Risks of Stroke, Myocardial Infarction, and Vascular Death in “low risk” Patients with a Non-recent Transient Ischaemic Attack. *J Neurol Neurosurg Psychiatry* 2003; **74**(5): 577–580
- Kessler C, Thomas, K. An examination of economic outcomes associated with misdiagnosis or undertreatment of TIA. *The American Journal of Managed Care* 2009 Chicago
- National Institute for Health and Clinical Excellence. (2008) Diagnosis and management of acute stroke and transient ischaemic attack (TIA). London, 2008
- Bakker FC, et al. Cognition and Quality of life in patients with Carotid Artery Occlusion; a Follow up Study. *The Netherlands. Neurology* 2004; **62**: 2230-35
- Le Vasseur SA, et al. The SEIQoL-DW is a Valid Method for Measuring Individual Quality of Life in Stroke Survivors attending a Secondary Prevention Clinic. *Quality of Life Research* 2005; **14** : 779–88
- Wijk IV, et. al. Mental Status and Health-Related Quality of Life in an Elderly Population 15 years after Limited Cerebral Ischaemia. *J Neurol* 2007; **254**: 1018–25
- Suenkeler IH, et al. Timecourse of Health-Related Quality of Life as determined 3, 6 and 12 months after Stroke. Relationship to Neurological Deficit, Disability and Depression. *J Neurol* 2002; **249**: 1160–67
- Bakker FC, et al. Cognition and Quality of Life in patients with Carotid Artery Occlusion; a Follow up Study. *Neurology* 2004; **62**: 2230–35
- Arts MLJ, et al. High Satisfaction with an Individualized Stroke Care Programme after Hospitalization of Patients with a TIA or Minor Stroke: *Cerebrovascular Diseases* 2008; **25**: 566–71
- Kessler C, Thomas K. An Examination of Economic Outcomes associated with Misdiagnosis or Undertreatment of TIA. *The American Journal of Managed Care* 2009; **15**(6 Suppl): s170–6
- Winward C, et al. A Population-Based Study on the Prevalence of Fatigue after Transient Ischaemic Attack and Minor Stroke. *Stroke* 2009; **40**(3): 757–61
- Hickie I, et al. Vascular Risk to Late-Life Depression: Evidence from a Longitudinal Community Study. *Sydney. Australian and New Zealand Journal of Psychiatry* 2003; **37**: 62–65
- Chardavoyne J, Frechette VE. Occult PTSD with Panic Attacks in a Patient Post-TIA: Case Report. *Int J Psychiatry Med* 2006; **36**(4): 427–34
- Daniel K, Wolfe D, Busch M, McKeivitt C. What are the social consequences of Stroke for Working-aged Adults? A Systematic Review. *Stroke* 2009; **40**(6): e431–40
- Treger I. et al. Return to Work in Stroke Patients. *Disability & Rehabilitation* 29(17): 1397–403 2007.
- Dennis M, et al. Incidence of transient ischemic attacks in Oxfordshire, England. *Stroke* 1989; **20**; 333–39
- Rees PM, Fowler CJ, Maas CP. Sexual function in men and women with neurological disorders; *The Lancet* 2007; **369**; 512
- Pfeil M, et al. Depression and Stroke: a Common but often Unrecognized Combination. *British Journal of Nursing* 2009; **18**(6): 365–69
- Rigby H, et al. A Systematic Review of Caregiver Burden Following Stroke. *International Journal of Stroke* 2009; **4**(4): 285–92
- Green T, King KM. The Trajectory of Minor Stroke Recovery for Men and their Female Spousal Caregivers: Literature Review. *Journal of Advanced Nursing* 2007; **58**(6): 517–31
- Lennon O, Blake C. Cardiac rehabilitation adapted to transient ischaemic attack and stroke (CRAFT) *BMC neurology* 2009; **9**: 9