

Brain foundation essay: Experiencing a mini stroke.

At 10am, sitting at home, Ellen, a 62 year old woman experiences right sided arm and leg weakness, and then when trying to ask her elderly husband for help she realises she has difficulty expressing herself. Ellen's husband calls for an ambulance and is immediately taken to hospital, arriving 45 minutes after her symptom onset. Upon reaching hospital Ellen is immediately seen by an on call neurologist, however her right arm has started to regain some strength. Ellen then becomes embarrassed as she suspects she may have just been sitting poorly or had a headache. However, the neurologist insists on sending Ellen to Radiology to undergo a routine neurological CT scan and she is admitted for observations over night.

The next day Ellen is visited by the same neurologist who met her in the ambulance. The neurologist tells Ellen that yesterday she experienced a minor stroke, and she needs to be carefully looked after in order to ensure that she does not have an ischemic stroke. Ellen is sent home the day after she was admitted to hospital with an appointment to return in a week to the stroke clinic. She is also given a large list of medications that she is to start taking immediately. She still experiences some difficulty expressing herself, but the neurologist told her that this was expected and was called dysphasia. Also, Ellen still feels tingling in her hands and feet, but again the neurologist told her that this is an effect of having had a minor stroke and that this feeling for last up to six months.

This is the typical patient story of a person experiencing a minor stroke. Stroke is the leading cause of adult disability in the developed world and the second most common cause of death in western countriesⁱ. Stroke is categorised into either ischemic (85% of events) or intracerebral haemorrhage (15%)ⁱⁱ. Transient ischemic attacks (TIA) and minor strokes are brief episodes of neurological symptoms due to a vascular episode that lasts less than 24 hours. A minor stroke is separate from a TIA because a TIA will cause no permanent infarction (Brain death), whereas mini strokes cause small volumes of infarctionⁱⁱⁱ. Ellen was told that she had suffered from a minor stroke, and therefore the neurologist would have seen evidence of infarction from the CT that she underwent.

Patients are at high risk of further events, especially recurrent stroke, myocardial infarction, and death from vascular causes after their first event. The risk of further events are highest in the first two weeks after an acute event. An estimated 80% of recurrent events may be preventable through blood pressure lowering, anti platelet therapy, dietary changes, exercise and statin therapy^{iv}. It is estimated that the risk of further stroke is around 12.8% during the first week after a TIA or mini stroke^v. For these reasons Ellen was given an appointment for the stroke clinic in the following week, as well as several medications to start, in order to prevent another stroke.

ⁱ Rothwell PM, Coull AJ, Silver LE, et al. Population-based study of event-rate, incidence, case fatality, and mortality for all acute vascular events in all arterial territories (Oxford Vascular Study). *Lancet* 2005;366:1773-1783

ⁱⁱ Donnan GA, Fisher M, Macleod M, Davis SM. Stroke. *Lancet* 2008;371:1612-1623

ⁱⁱⁱ Easton JD, Saver JL, Albers GW, et al. Definition and evaluation of transient ischemic attack: a scientific statement for healthcare professionals from the American Heart Association/American Stroke Association Stroke Council, Council on Cardiovascular Surgery and Anesthesia, Council on Cardiovascular Radiology and Intervention, Council on Cardiovascular Nursing, and the Interdisciplinary Council on Peripheral Vascular Disease: the American Academy of Neurology affirms the value of this statement as an educational tool for neurologists. *Stroke* 2009;40:2276-2293

^{iv} Hackam DG, Spence JD. Combining multiple approaches for the secondary prevention of vascular events after stroke: a quantitative modeling study. *Stroke* 2007;38:1881-1885

^v Giles MF, Rothwell PM. Risk of stroke early after transient ischaemic attack: a systematic review and meta-analysis. *Lancet Neurol* 2007;6:1063-1072