Neuroepidemiology 2009;33:358
DOI: [10.1159/000254573](https://doi.org/10.1159/000254573)

Epidemiological Implications of the New Definition of Transient Ischemic Attack

Yannick Béjot, Maurice Giroud

Stroke Registry of Dijon (Inserm et Institut de Veille Sanitaire),
EA4184, University Hospital and Faculty of Medicine and
Department of Neurology, Dijon, France

The new definition of transient ischemic attack (TIA) – i.e. a brief episode of neurologic dysfunction caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than 1 h, and without evidence of acute infarction – was first suggested in 2002 [1]. This change in the definition was justified by several reasons, including the fact that TIAs should not be considered benign. Indeed, after a first TIA, 2.5–5% of patients have a stroke within the next 48 h, and 5–10% within the first month [1–3].

Although this new definition is useful in clinical practice since the management in terms of secondary prevention of patients with either stroke or TIA is similar, it raises methodological questions for epidemiological investigations of stroke. The assessment of the incidence of stroke within a population is mainly based on the exhaustive ascertainment of cases, which requires both a clear definition of what must be measured and validated population-based registries [4]. Most of the studies from such registries have defined stroke according to the WHO criteria, i.e. rapidly developing clinical signs of focal (at times global) disturbance of cerebral function lasting more than 24 h or leading to death, with no apparent cause other than that of vascular origin. With the new definition of TIA, a neurological dysfunction lasting less than 24 h but with proof of infarction on imaging should now be considered as a stroke.

Previous population-based studies have demonstrated that the incidence of TIA, defined according to the classical definition, varies from 11 to 83/100,000/year [5–9]. Nevertheless, the proportion of such TIA patients with cerebral infarction on brain imaging is unknown. This proportion could vary from one study to another, and is considerably influenced by the use of resources, i.e. the proportion of brain MRI performed in patients with transient neurological symptoms, which is highly inconsistent between studied populations. For example, in the stroke registry of Dijon, France, only 15% of TIA patients had a brain MRI over the study period 2000–2004 [9]. As a consequence, comparing the incidence of stroke from one region to another could be biased

according to the proportion of patients with transient neurological symptoms who benefit from a brain MRI, especially since some of them would be classified as stroke patients if an ischemic lesion was found.

Consequently, to avoid such biases and to allow comparisons between studies, it appears to be useful to ascertain all cerebrovascular events in population-based registries that evaluate the incidence of stroke. This challenge is of a great importance as it would provide a clear representation of the burden of the disease.

References

- 1 Albers GW, Caplan LR, Easton JD, Fayad PB, Mohr JP, Saver JL, Sherman DG, TIA Working Group: Transient ischemic attack – proposal for a new definition. *N Engl J Med* 2002;347:1713–1716.
- 2 Johnston SC, Gress DR, Browner WS, Sidney S: Short-term prognosis after emergency department diagnosis of TIA. *JAMA* 2000;284:2901–2906.
- 3 Hankey GJ: Redefining risks after TIA and minor ischaemic stroke. *Lancet* 2005;365:2065–2066.
- 4 Sudlow CL, Warlow CP: Comparing stroke incidence worldwide: what makes studies comparable? *Stroke* 1996;27:550–558.
- 5 Feigin VL, Shishkin SV, Tzirkin GM, Vinogradova TE, Tarasov AV, Vinogradov SP, Nikitin YP: A population-based study of transient ischemic attack incidence in Novosibirsk, Russia, 1987–1988 and 1996–1997. *Stroke* 2000;31:9–13.
- 6 Brown RD Jr, Petty GW, O'Fallon WM, Wiebers DO, Whisnant JP: Incidence of transient ischemic attack in Rochester, Minnesota, 1985–1989. *Stroke* 1998;29:2109–2113.
- 7 Kleindorfer D, Panagos P, Pancioli A, Khoury J, Kissela B, Woo D, Schneider A, Alwell K, Jauch E, Miller R, Moomaw C, Shukla R, Broderick JP: Incidence and short-term prognosis of transient ischemic attack in a population-based study. *Stroke* 2005;36:720–723.
- 8 Rothwell PM, Coull AJ, Giles MF, Howard SC, Silver LE, Bull LM, Gunnikova SA, Edwards P, Mant D, Sackley CM, Farmer A, Sandercock PA, Dennis MS, Warlow CP, Bamford JM, Anslow P, Oxford Vascular Study: Change in stroke incidence, mortality, case-fatality, severity, and risk factors in Oxfordshire, UK from 1981 to 2004 (Oxford Vascular Study). *Lancet* 2004;363:1925–1933.
- 9 Béjot Y, Rouaud O, Benatru I, Durier J, Caillier M, Couvreur G, Fromont A, Falvo N, Osseby GV, Cottin Y, Zeller M, Millerot E, Marie C, Moreau T, Giroud M: Trends in the incidence of transient ischemic attacks, pre-morbid risk factors and the use of preventive treatments in the population of Dijon, France from 1985 to 2004. *Cerebrovasc Dis* 2007;23:126–131.

Dr. Yannick Béjot
Dijon Stroke Registry, Department of Neurology
University Hospital, 3 Rue du Faubourg Raines
FR-21000 Dijon (France)
Tel. +33 3 80 29 37 53, Fax +33 3 80 29 36 72, E-Mail ybejot@yahoo.fr