

## **Abstract**

Long term prognosis of transient focal neurological attacks in Northern Portugal

### **Introduction**

Transient neurological attacks (TNA) are neurological symptoms or signs with abrupt onset lasting less than 24 hours. If they are focal, presumed to be of ischaemic vascular origin and confined to an area of the brain or eye perfused by a specific artery, they are known as transient ischemic attack (TIA). Other TNA can occasionally be of vascular origin, as isolated vertigo or vertigo as a predominant symptom, or other focal symptoms and signs or even a mixture of focal and nonfocal symptoms and signs. While short term prognosis of TIA as regards stroke or other vascular events has been already studied, little is known about long term prognosis of TNA, especially TNA not fulfilling criteria for TIA.

### **Objectives**

The main objectives were to determine in urban and rural population from Northern Portugal the 1) incidence of a first-ever-in-a-life-time TNA according to a proposed classification (TIA, focal TNA, mixed TNA, labyrinthitis, benign paroxysmal positional vertigo and unspecified vertigo) and 2) the occurrence of vascular events (stroke, myocardial infarction or vascular death) during a 7-years follow-up after the index episode.

### **Methods**

All first-ever-in-a-life-time TNA occurring between October 1998 and September 2000 in 104700 residents in rural and urban area of Northern Portugal were registered in a prospective incidence study (ACINrpc). Overall, 608 patients were included and were observed by a neurologist at 3, 12 months and 7 years after the index event. TNA were classified as TIA according to the classic accepted definition and other TNA were classified as focal TNA when only focal symptoms were present and mixed TNA when both focal and nonfocal symptoms occurred. Specific subgroups of vertigo, either when occurred alone or as a predominant symptom among others, were considered: labyrinthitis and benign paroxysmal positional vertigo according to published criteria or unspecified vertigo if there was no evidence for a classification in the two previous groups. Specific crude incidence rates and standardised to the european population were calculated for the TNA subgroups. The respective 95% confidence intervals were calculated using the Poisson distribution. Prognosis in terms of stroke or a major vascular event occurrence was determined by the Kaplan-Meier method and the Cox proportional hazards model was used to evaluate the risk of vascular events according to socio-demographic characteristics, prevalence of vascular risk factors and TNA subgroup.

### **Result**

The annual TNA crude incidence rate per 1000 persons was 2.90 (95% CI: 2.67 to 3.13), slightly higher in the urban compared to the rural area (2.93 vs. 2.78) but similar after standardization to the european population (2.28 vs. 2.34). TIA incidence was 0.67 (95% CI: 0.56 to 0.78), higher in the rural

area (0.96 vs. 0.61). Incidence rate of focal TNA, benign paroxysmal positional vertigo and unespecific vertigo were higher in urban area, 0.39 vs. 0.19, 0.74 vs. 0.43 and 0.19 vs. 0.05 respectively. Carotid and vertebrobasilar TIA and labyrinthitis had a higher incidence rate in rural area, 0.64 vs. 0.41, 0.27 vs. 0.18 and 0.4 vs. 0.2. Mixed TNA had the same incidence rate in both areas.

During the 7-years follow-up a stroke occurred in 34.0% of TIA patients, myocardial infarction (MI) in 7.1% and a vascular event (stroke, MI or vascular death) in 43.3%. Vascular events in patients with other TNA were more frequent in those with unspecified vertigo (stroke 8.8%, MI 11.8% and vascular event 29.4%) and mixed TNA (stroke 10.3%; MI 8.0%; vascular event 21.8%). In patients with a benign paroxysmal positional vertigo, stroke occurred in 8.3%, MI in 0.7% and a vascular event in 12.5%. A stroke occurred in 4.5% of the patients with a focal TNA, a MI in 1.4% and vascular events in 10.8%. Vascular events were less frequent after a labyrinthitis, stroke in 4.5%, MI in 1.5% and a vascular event in 6.0% of patients. Univariate analysis of time to vascular event (stroke, MI or vascular death) showed an increase in risk associated with age, gender (men), hypertension, diabetes, atrial fibrillation or a previous history of MI. The multivariate model including socio-demographics characteristics and vascular risk factors evidenced an increased risk of vascular events in men and in patients with diabetes. Considering death from any cause as the end point, age and history of angina pectoris or atrial fibrillation worsened the prognosis. Including a time dependent covariate, time to stroke occurrence, the results evidenced that the later the stroke occurs the better prognosis. Comparing the mortality rate of TNA patients with that of the overall Portuguese population of the same age and sex, TIA patients have a higher mortality rate in first 3 years after the index episode, an identical pattern found in patients with mixed TNA. Patients with labyrinthitis, benign paroxysmal positional vertigo and focal TNA have a mortality rate lower than general population. On the contrary patients with unspecified vertigo have a higher mortality rate than the general population, similar to those with a vertebrobasilar TIA.

## **Conclusions**

Patients with mixed TNA or unspecified vertigo have a high risk of subsequent vascular events and higher mortality rate than general population. Unspecified vertigo patients have a mortality rate similar to those with a vertebrobasilar TIA. The management of patients with mixed TNA and unspecified vertigo should be looked as urgent as TIA patients.