LONG-TERM POST-STROKE OUTCOME

THE SAHLGRENSKA ACADEMY STUDY ON ISCHEMIC STROKE

Petra Redfors

Department of Clinical Neuroscience and Rehabilitation
Institute of Neuroscience and Physiology
The Sahlgrenska Academy, University of Gothenburg, Sweden

Abstract

Independent studies report that stroke incidence in younger ages is increasing. Consequences after stroke include disability, cognitive dysfunction and the risk of stroke recurrence and coronary events. There are still many gaps of knowledge regarding post-stroke outcomes. Therefore the aim of the present thesis was to describe long-term prognosis in young and middle-aged ischemic stroke sufferers and to identify predictors of mortality and recurrent vascular events.

The studies were based on the Sahlgrenska Academy Study on Ischemic Stroke (SAHLSIS), with 1,090 consecutive adult patients and 600 controls, all younger than 70 years. All participants were very well characterized at baseline with respect to vascular risk factors, life-style and socioeconomic factors. Patients were classified according to etiologic subtype, i.e. large vessel disease (LVD), small vessel disease (SVD), cardioembolic stroke (CE), cryptogenic stroke, other determined stroke and undetermined stroke. Stroke severity was assessed. Two years after index stroke surviving patients were contacted for a structured telephone interview, with questions about recurrent vascular events and assessment of functional outcome. After 7 years patients participated in a follow-up visit to a study physician and a study nurse, and were tested with the Barrow Neurological Institute Screen for Higher Cerebral Functions (BNIS). Data on mortality and recurrent vascular were collected through national registers and medical records for both cases and controls.

First, we investigated 2-year outcomes in patients. We showed that stroke severity, the subtype of LVD, and hypertension were independent predictors of the composite outcome (death and/or recurrent vascular events). With regards to functional outcome, stroke severity was also an independent predictor of dependency.

Next, we investigated very long-term outcomes. After 12-year follow-up stroke incidence was 10 times higher in cases compared to controls, whereas the incidence of coronary events was only twofold higher in cases. Both diabetes and smoking were independent predictors of the composite outcome (recurrent vascular events), and diabetes also independently predicted both mortality and coronary events. Living alone was a strong and independent predictor of mortality, and also predicted stroke recurrence. There was an interaction between living alone and gender, with highest mortality among males living alone. Living alone also showed association to mortality in controls. An increased risk of coronary events was found among physically inactive patients. A personal history of stroke predicted the composite outcome and stroke recurrence, whereas a personal history of coronary heart disease showed association to all outcomes except stroke recurrence. Patients with the subtype of LVD and CE stroke had an increased mortality rate, and LVD also showed an increased incidence of the composite outcome. Stroke severity was associated with all outcomes except coronary events. We found the BNIS to be a promising screening instrument for cognitive dysfunction after ischemic stroke, and our results indicate that a large proportion of younger stroke patients may have cognitive dysfunction many years after stroke.

In conclusion, young and middle-aged ischemic stroke patients face a high and sustained risk of mortality and recurrent vascular events many years after stroke. In addition to classical vascular risk factors stroke subtype and stroke severity influence outcome events. Moreover, emerging modifiable lifestyle factors such as living alone and physical activity have an impact on mortality and the rate of recurrent vascular events, and some of these effects vary by endpoint. Thus, further studies are needed to develop more patient-tailored secondary prevention measures in order to improve long-term outcomes after ischemic stroke.

Keywords: stroke, cohort studies, prognosis, predictor, ischemic stroke subtypes, functional outcome, mortality, myocardial infarction, social isolation, living alone, cognitive dysfunction

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