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The changes of secondary prevention practice in Czech post-stroke patients between 2007 and 2012/13

Jiří Vaněk [a], Otto Mayer Jr. [a,b,*], Peter Wohlfahrt [c,d], Lenka Kielbergerová [e,f], Alena Krajčoviechová [c], Jan Bruthans [c], Renata Cífková [c,d]

[a] 2nd Department of Internal Medicine, Medical Faculty of Charles University and University Hospital, Pilsen, Czech Republic
[b] Biomedical Center, Medical Faculty of Charles University, Pilsen, Czech Republic
[c] Centre for Cardiovascular Prevention of the First Faculty of Medicine, Charles University and Thomayer's Hospital, Prague, Czech Republic
[d] International Clinical Research Centre, St. Anne's University Hospital, Brno, Czech Republic
[e] Department of Neurosurgery, University Hospital, Pilsen, Czech Republic
[f] Department of Neurology, University Hospital, Pilsen, Czech Republic

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ABSTRACT

It is evident that post-stroke patients benefit from appropriate secondary prevention; however, in clinical reality these patients are often overlooked in these terms. We aimed to evaluate the changes in adherence to treatment targets (defined by current guidelines) since 2007 in Czech patients after first ischemic stroke.

Two independent descriptive surveys were undertaken in 2007 and 2012/13. Consecutive patients less than 81 years of age suffering for verified first ischemic stroke were identified and examined at least 6 months afterwards.

The study population included 2 series of 341 and 424 patients, aged 69.0 (±SD 9.1) and 66.8 (±SD 10.4) years, respectively. The initial stroke management improved between 2007 and 2012/13, the proportion of patients initially hospitalized at stroke unit raised significantly from 6.5 to 41.8%, while initial thrombolysis from 2.4 to 22.2%. Prescription rate of statins increased from 52.2 to 62.0%, while of clopidogrel from 0 to 18.4%.

In 2007 survey about 39% of patients were obese, 61% showed inappropriate blood pressure, 68% were hypercholesterolemic and 33% had inappropriate glucose control. Over time, only control hypercholesterolemia significantly improved between 2007 and 2012/13 (proportion of patients with LDL ≥2.5 mmol/L decreased from 67.9 to 58.3%).

In 2007 survey we observed particularly high mortality risk. 5-year all-cause mortality and cardiovascular mortality were 25.8% and 19.9%, respectively.

In conclusion, despite substantial improvement in acute management, clinical practice in secondary prevention in post-stroke patients remains far from being optimal.

* *Corresponding author at*: University Hospital, 2nd Dept. of Internal Medicine, 13 E. Beneše St., 320 00 Plzeň, Czech Republic. Tel.: +420 377402797; fax: +420 377402929.
E-mail address: mayero@fnplzen.cz (O. Mayer Jr.).

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Introduction

The ultimate goal of treatment of patients with atherovascular disease is to reduce the case fatality, risk of recurrent cardiovascular event, extend life-time and improve its quality. Management of patients with coronary heart disease (CHD) was defined extensively by the series of Joint European Societies' Guidelines since 1994 [1–5], and since the third revision of these guidelines [3], effective prevention in patients with established cerebrovascular disease (i.e. post-ischemic stroke) has also been defined as priority. Similar principles (as in coronary heart disease patients), including treatment target value of conventional cardiovascular risk profile and several "mandatory" pharmacotherapies, should be adopted for clinical practice.

To describe the clinical reality in secondary prevention of CHD with respect to adherence to these guidelines, the EUROASPIRE (European Action on Secondary Prevention by Intervention to Reduce Events) project was started with repeated surveys on patients with clinically manifest CHD that were realized in 1995/96, 1999/2000, 2006/7 and finally in 2012/13 (i.e. EUROASPIRE I–IV projects) [6–9]. Data of these surveys demonstrated high prevalence of inadequately controlled modifiable risk factors and insufficient prescription of basic pharmacotherapies in secondary prevention of CHD across all European countries included. The comparable data in patients with cerebrovascular disease were generally lacking until a stroke-specific module was developed as voluntary add-on to the EUROASPIRE III survey. The aims and objectives of this module were to identify prevalence of CHD risk factors, lifestyle habits and medication use among patients after first ischemic stroke in order to describe the current status of clinical practice against Third European Guidelines principles and this survey was realized in four European countries (five EUROASPIRE project centers) in 2007 [10], including Czech Republic [11]. The stroke-specific module of EUROASPIRE III study demonstrated that basic secondary prevention principles were implemented into real clinical practice in post-stroke patients in even less extent, than in CHD patients. The results highlighted the need for structured disease management and targeted secondary prevention strategies after stroke. Second survey in patients with cerebrovascular disease (ESH Stroke survey) was started in 2012 (and currently analyzed) under the nearly similar protocol [12] and in the same Czech centers as EUROASPIRE III survey in 2007.

The aim of present analysis is to demonstrate the changes in clinical practice in secondary prevention of cerebrovascular disease between 2007 and 2012/13 in Czech centers of above mentioned surveys.

Materials and methods

Study population and study design

The study population consists of Czech patients examined in the framework of two well-defined surveys in patients after first ischemic stroke, EUROASPIRE III – stroke specific module in 2007 and ESH stroke survey in 2012–13. The selection of study subject and protocol of examination were virtually similar for both surveys and described in detail elsewhere [10–12]. Both surveys were conducted in two centers in Czech Republic: University Hospital Pilsen and the Centre for Cardiovascular Prevention of Thomayer's Hospital in Prague.

Patients with the diagnosis of ischemic stroke were identified from hospital discharge lists. Stroke was defined according to the World Health Organization criteria [13] and ischemic etiology of stroke was verified by brain imaging (either CT or MRI scan). Patients with recurrent stroke event (previous transient ischemic attack was acceptable), secondary hemorrhagic transformation, aged more than 80 years at the time of index event, patients not living in the study region and those who deceased during index (stroke) hospitalization were excluded. The recruitment was done by reviewing hospital records retro-consecutively (i.e. starting with the most recent stroke hospitalization backwards until the planned pool of ~500 patients was reached). Finally, in first survey (2007) 507 patients met inclusion criterion (i.e. first verified ischemic stroke), but of them 77 died after discharge from index hospitalization – i.e. 430 patients were finally invited for interview. In the second survey (2012–13) 736 patients met inclusion criteria, with 162 after-discharge deaths, i.e. 574 patients were invited.

Clinical examinations

Interview was realized at least 6 months after admission for index stroke event, during single (about 3 months) campaign. Information on personal and demographic characteristics, personal and family history of coronary heart disease, lifestyle and pharmacotherapy was obtained. The following clinical examinations were performed: height and weight were measured in light indoor clothes without shoes using SECA 220 scales and measuring sticks. Waist circumference was measured using a steel tape measure. Blood pressure (BP) was measured twice in the sitting position on the right arm using a standard mercury sphygmomanometer (and the average value was used). Current (i.e. at time of interview) evident neurological deficit (aphasia, facial palsy, limb paresis or several sensitive deficit) was assessed by the examiner (physician specialized in internal medicine), while the global disability was considered using Barthel ADL (activities of daily living) Index [14]. A standard 12-channel ECG was obtained in all patients and the presence of atrial fibrillation was considered by examiner. Breath carbon monoxide was measured by a SMOKERLYSER device (model EC 50, Bedfont Scientific, Upchurch, UK) to verify the reported smoking habit.

Biochemical examination

Venous blood samples were drawn after at least 12 h of overnight fasting. All laboratory examinations were performed in series from aliquots stored at −70° and included: estimation of serum total (TCHOL) and HDL (HDL) cholesterol, using an ARCHITECT c800 analyzer (Abbott Laboratories, Germany) and DOT Diagnostics commercial kits (Czech Republic); the same analyzer was used for measuring serum triglycerides (TG) and glucose (GLU). HbA1c was estimated by ionex liquid chromatography using G7 analyzer (TOSOH, Japan). LDL was calculated