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The role of arterial hypertension in the primary prevention of stroke



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ABSTRACT

Hypertension belongs to the most important modifiable risk factors of cerebrovascular diseases and stroke. Home or 24-hour ambulatory blood pressure measurement (ABPM) is a preferable measurement of blood pressure. Nonpharmacologic treatment should include smoking abstinence, overweight reduction, restriction of alcohol intake and moderate consumption of salt.

Evidence based clinical studies have convincingly proved that drug therapy decreases the incidence of cerebrovascular diseases and stroke by 40–60%. Systolic blood pressure is more important than diastolic blood pressure in the elderly patients, in whom the majority of cerebrovascular diseases and strokes occur.

A great discussion concentrates on the issue of goal values of blood pressure in the prevention of cerebrovascular diseases and stroke. Unfortunately all evidence based studies were performed only in patients with initial systolic blood pressure of 160 mm Hg and more.

Only 2 studies focused on the target systolic blood pressure in the stroke prevention. The ACCORD study compared target values of 120 and 140 mm Hg. Target systolic pressure 120 mm Hg was superior (over 140 mm Hg) in stroke prevention, but not in prevention of other cardiovascular events (myocardial infarction or heart failure).

The recent SPRINT study found a decrease of total mortality in patients with target systolic blood pressure of 120 mm Hg over those with 140 mm Hg target. From the above mentioned studies it seems that the lower systolic blood pressure is preferable.

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Stroke in our country occurs in approximately 50 000 people per year, of which about one quarter die. The incidence of stroke increases with age, so we focused mainly on hypertension in the elderly. Strokes could be ischemic or hemorrhagic. Ischemic strokes represent 80% of all strokes. Strokes represent the third cause of mortality and the first cause of disability.

Risk factors of stroke may be classified into modifiable and non-modifiable (Table 1).

Arterial hypertension is the strongest risk factor for stroke and due to its importance it belongs just behind the non-modifiable factors such as age, male gender and family history.

Hypertension is one of the main risk factors of stroke. An effective treatment of hypertension protects against ischemic and hemorrhagic stroke. The relation between the cerebrovascular mortality and the blood pressure is linear starting at values 115/75 mm Hg.

High blood pressure (BP) and a higher incidence of hypertension in the elderly are not natural consequences of aging and their effects are not benign. The incidence of systolic–diastolic hypertension as well as isolated systolic hypertension is in the elderly significantly higher than in the younger age groups. The study NHANES III indicates that in the US high blood pressure occurs in 60% of elderly Caucasian population [1].

The systolic pressure proved to be the best single predictor of coronary or cerebrovascular events in the Cardiovascular Health Study involving 5888 persons aged 65 years or older [2].

Therefore, at the World Congress on Hypertension in Berlin, it was proposed that all people aged 50 years and older should remember only one number – 150 mm Hg – as a threshold for hypertension [3].

Systolic blood pressure has more important prognostic value than diastolic blood pressure

The guidelines for treatment of hypertension had relied mainly on diastolic pressure for more than thirty years. In the 90s, however, it was found that the systolic blood pressure in the elderly is a better predictor of consequent complications (coronary artery disease, heart failure, stroke, terminal renal failure) as well as total mortality than the diastolic pressure [2,4].

The systolic blood pressure increases with age, whereas the diastolic pressure increases only up to age of 50 years and then, at the time when cardiovascular risk begins to rise, does not change or decreases. Therefore, the prevalence of isolated systolic hypertension rises over the age of 50 years. As a result, the prevalence of systolic hypertension increases in the age group over 50 years. Because more than 75% of hypertensive patients are older than 50 years, the major risk factor in the age group over 50 years, and especially in the age group over 60 years, is the systolic hypertension. Therefore, the use of diastolic blood pressure for diagnosis and risk stratification in the elderly population has become illogic [3]. These authors accurately named their work “Systolic Pressure is All That Matters”. This is certainly an appropriate and true statement, but the remaining problem is that our knowledge about the optimal value of systolic blood pressure in the elderly is more than limited and does not rely on data based on evidence (“evidence based” medicine). The initial systolic blood pressure was not, in fact, lower than 160 mm Hg in any trial on treatment of hypertension in the elderly, including trials on treatment of isolated systolic hypertension.

The European guidelines for the treatment of arterial hypertension in the elderly [5] recommend initiating the antihypertensive therapy in all patients in which the systolic blood pressure is 160 mm Hg or higher and/or the diastolic blood pressure is 90 mm Hg or higher.

A huge retrospective observational analysis, the Prospective Studies Collaborators study [6], is based on data of prior 61 observational trials about the blood pressure and mortality and it contains nearly 1 million persons (exactly 958,074) in the age of 40–89 years and 120,000 deaths. The blood pressure showed a highly significant linear correlation with the risk of cardiovascular mortality, coronary artery disease and stroke even in so-called normal range values of 115 mm Hg of systolic

Table 1 – Basic risk factors of stroke.

Non-modifiable	Modifiable
Age	Hypertension
Gender	Smoking
Race	Hypolipoproteinaemia
Hereditiy	Excessive alcohol abuse
Previous stroke or TIA	Diabetes mellitus
	Atrial fibrillation
	Carotid arteries stenosis
	Low endurance physical activity
	Heart disease

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