



Stroke

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Stroke is defined by WHO as the clinical syndrome of rapid onset of focal (or global, as in subarachnoid haemorrhage) cerebral deficit, lasting more than 24 h or leading to death, with no apparent cause other than a vascular one. Stroke can be divided to ischaemic stroke (approximately 85% in white populations) and haemorrhagic stroke (about 15%): either intracerebral haemorrhage or subarachnoid haemorrhage. Transient ischaemic attack (TIA) has similar symptoms as ischemic stroke, but it differs from ischaemic stroke in its duration (traditional view was that it lasts less than 24 h, but nowadays it is considered that TIA lasts less than 1 hour), and it does not leave neither any permanent neurological deficit, nor signs or brain imaging.

Stroke is one of the most common causes of death and disability in the adult population of the modern society. The total prevalence of cerebrovascular diseases in Europe ranges between 5 and 8 per 1000. It is estimated that at least 250,000 individuals suffer some form of stroke in Europe each year, about one fourth of them first-ever-in-lifetime stroke. Stroke mortality varies widely among countries for which routine death-certificate data are available. In the early 1990s it was lowest, and had been declining steeply, in western countries, but it was two or three times higher in developing countries and countries in transition in eastern Europe. Early death after stroke is generally due to the complications of the brain lesion itself (eg, mass effect, disruption of vital centres, etc.) About 30% of patients die within a year after a stroke. Recovery after stroke occurs through several overlapping processes. In the first hours and days these processes may include resolution of the ischaemic penumbra, cerebral oedema, and comorbidities (eg, infection) that exacerbate the functional effects of the stroke itself. Later, neural plasticity by which neurons take on new functions, the acquisition of new skills through training (eg, physiotherapy and occupational therapy), and modification of the patient's environment lead to further gains in function. Of stroke survivors, nearly half are left dependent. However, the outcome depends on the pathological type of stroke, and the sub-type of ischaemic stroke.

Stroke can sometimes affect children and young adults, but it is mainly a disease of older people. There is a steep rise in incidence with age, with three-quarters of all first strokes occurring after the age of 65 years. By 2020, stroke mortality will have almost doubled, mainly as a result of an increase in the proportion of older people and the future negative effects of risk factors in developing countries.

The consequences of stroke are difficult for both the patients and their families. Pareses remain in many stroke patients, many of them have speech problems, loss of memory, emotional lability, etc. Therefore, stroke is a public health problem rather than an individual's

problem. Also, stroke entails considerable economic implications for both the society and patient's family.

Despite all these serious issues related to stroke, the public knowledge about the disease is inadequate and frequently biased. There is a predominance of a fatalistic attitude, that stroke is an unavoidable and untreatable event. It is especially regrettable that there still are health workers who think that nothing can be done in stroke, and that everything is in God's hands. Such a nihilistic approach has resulted from the historically inherited opinion on the complete failure of stroke therapy. It was long believed that the diagnosis and therapy of stroke are of a merely academic importance, inapplicable in practice, because „in stroke, everything has already happened at the time of examination“.

Although no „magic therapy“ to „cure“ stroke has yet been discovered, a number of new concepts indicate that the nihilistic approach to stroke therapy should definitely be abandoned. Current therapy for stroke is directed toward prevention of risk factors for the development of stroke, therapeutic use of anticoagulants and antiplatelet drugs for ischemic stroke, intensive care in acute phase of stroke, thrombolytic therapy in early phase of ischemic stroke, secondary prevention, and rehabilitation. The methods of vascular surgery, e.g., carotid endarterectomy and stenting, are certainly successful in the pathologic states of extracranial carotid circulation. Neurosurgical methods in therapy of aneurysms and arteriovenous malformations have also proved effective, while data are collected on the usefulness of neurosurgical methods of decompression for strokes involving a great volume of cerebral tissue with pronounced compression of the surrounding healthy structures.

In the light of these facts, it is obviously necessary to modify the awareness and mode of acceptance of stroke, both among health professionals and in the public. Stroke is and should be considered a medical emergency. The public should be properly informed via mass media, in order to change the conventional, erroneous nihilistic and fatalistic attitude toward stroke. The public should be informed on the symptoms of stroke and treatment

possibilities. It should also be emphasized that stroke is an emergency that requires rapid diagnosis, immediate and appropriate management.

Acute management of stroke patients should be organized in adequately equipped hospitals that have stroke units. It has been demonstrated that organized care for stroke patients in stroke units significantly reduces stroke mortality rate and considerably contributes to functional recovery of these patients.

The main goal for future actions in the field of stroke can be summarized as follows:

- education of population about stroke
- modification of the fatalistic view of stroke
- changing the nihilistic approach to stroke therapy
- imposing the concept of stroke as a medical emergency
- changing skepticism about acute stroke therapy

We are very proud that we organized numerous activities on prevention of stroke in last decades in Zagreb. In recent years City of Zagreb Foundation for helping people who suffered of stroke and Centre for Prevention was established and it is working successfully ever since. Also, we managed to successfully organize international post-graduate course: Summer Stroke School – Healthy Lifestyle and Prevention of Stroke in Inter-University Centre Dubrovnik for 23 years. Since 1990, the course was organized each year in the beginning of June. The course is a meeting of respected scientists that work with stroke presenting and discussing all major aspects of stroke risk factors, as well as new insights in epidemiology, prevention, diagnosis, treatment and rehabilitation of stroke. Probably the major feature of the course is enabling exchange of experience among experts and comparison of stroke data from various countries. Primary objective of the course is to encourage cooperation and to promote exchange of knowledge between participants from different countries. Proceedings from the first course were published in *Periodicum biologorum*, and this year we publish this issue of *Periodicum biologorum* with the latest data about various aspects of stroke.