Acute Stroke Diagnosis and Monitoring—Experiences from European Stroke Units

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Keywords: European Stroke Council, stroke thrombolysis, acute stroke, stroke units, stroke team, EUSI

"Stroke is an emergency", this sentence is more and more recognized by the public as well as amongst patients at high risk for stroke, their families and physicians in hospitals. In Europe the increasing awareness started in the early 1990s when the German Stroke Foundation first established a concept of specific semi-intensive-care units for stroke patients to be diagnosed, monitored and treated immediately after onset of symptoms. Along with the evidence-based knowledge about the effectiveness of rtPA treatment of ischemic stroke within 3 hours, the former concept of stroke units which had been developed by Scandinavian and Australian institutions in particular, became less attractive: these institutions worked as rehabilitation centres mainly and often recruited patients days or even months after stroke. However, dedication of a particularly trained stroke team of physicians, nurses and technicians characterised its major achievement and was the 'jewel in the crown' to be transferred to the new acute stroke units. Application of brain and vascular imaging devices, such as duplex ultrasound, transcranial Doppler monitoring, MRI and MRA with PWI and DWI was implemented and further suggested that a selection of candidates for thrombolysis by refined early and rapid diagnosis could prevent disasters, such as otherwise occur if ischemic stroke turns into huge parenchymal haemorrhage.

The European Stroke Council and the European Stroke initiative supported an initiative which throughout Europe established the new concept of acute stroke treatment in different countries and institutions. A recent review showed that despite these "Helsingborg recommendations", five years later different standards still exist in Europe: this is not only true for the in-hospital management but in particular for the home management of the patient immediately after onset as well as during transfer to the hospital-based stroke unit. New approaches to train paramedics are useful and have shown to contribute significantly to the reduction of time lost in the acute stroke phase and to increase the number of patients to benefit from thrombolytic and other early stroke treatment as well as incidental prevention management.

Based on the pathophysiological concept of hemodynamic and embolic sources of stroke a best selection of established treatment for the individual patient is possible, if strictly designed programmes are performed, developed and quality controlled.

This presentation will report the results of a European survey on stroke units, the concept on which these strategies were founded and the advantages as well as limitations, hopes and pitfalls which we experienced during the last few years.

In addition, perspectives will be shown such as the Task Force Stroke Units in Europe, the EUSI Initiative of the European Stroke Council and regular programmes presented during annual European Stroke Conferences.