

genes of haemostatic and inflammatory system, homocysteine metabolism, and the renin-angiotensin aldosterone system, suggest significant effect for several SNIPs. Genome-wide linkage studies on Iceland population showed the correlation between several haplotypes in PDE4D and ALOX5AP genes and a risk of stroke. Their significance in other populations is unclear. Recently, a new technology allows looking at thousands of variants across the human genome. One small genome-wide association study in stroke was performed so far, however, SNPs affecting stroke risk were not found. Identifying genetic factors in stroke is important because it may allow identify new stroke mechanisms, which can allow formulating novel treatment strategies.

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Epidemiology of stroke

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Stroke incidence and case-fatality, their time trends and geographical variations have already been in the centre of interest for several years. Despite some progress in primary prevention the incidence of stroke remains high. Population-based stroke registries are valuable sources in providing information about stroke epidemiology in different geographical regions. However, serious restrictions for processing personal sensitive data exist at least in Estonia and limit the use of national databases for research purposes. The incidence rates of stroke vary between study centres. The variations are probably related to environmental and life-style factors, socioeconomic differences and perhaps genetics. The results from time trend studies of stroke have been conflicting. Mostly, decline in stroke mortality is reported and some centres have shown a trend of increasing stroke incidence. Increasing incidence has been linked to the implement of computerised tomography and unfavourable changes in risk factor profiles in certain communities. Stroke time trend studies have shown that improvements in primary prevention have a significantly higher impact on the incidence of stroke compared to case-fatality (CFR). A decline in CFR has been detected in several populations over time. CFR is mostly dependent on the acute care of stroke and stroke severity. The severity of stroke might be related to the extent and quality of primary prevention. It has been shown that pre-stroke use of antiplatelets agents and antihypertensive treatment for patients with hypertension results in less severe incident stroke. The goal is to prevent stroke from happening, and therefore it is necessary to intensify the primary prevention of stroke.

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Post-stroke epilepsy

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Stroke is the most common cause of the epilepsy among those age 60 and over. The overall occurrence of post-stroke epilepsy is estimated at 3-8%. In the Oxfordshire Community Stroke Project recurrent seizures in the first year of follow-up were diagnosed in 5.7% and within 5 years in 11.5%. According to others about 15% of patients experienced unprovoked seizures within 5 years following stroke. The risk of developing epilepsy following stroke remain significantly elevated for at least 20 years following stroke. In Poland on the basis of Polish National Stroke Registry that included 3238 patients, within one year follow-up period, post stroke epilepsy was diagnosed in 3.9% of patients, more frequently among those with intracerebral hemorrhage (4.1%). In the group of patients with ischemic stroke recurrent epileptic fits more frequently have been observed among patients with cardioembolic stroke – 7.5% (95% CI 4.1-11.7) than among patients with lacunar stroke – 3.9% (95% CI 1.9-6.8). In the Oxfordshire Community Stroke Project the difference was even higher, only 1% of patients with lacunar strokes developed poststroke epilepsy vs 11% of patients with total anterior circulation infarct.

Post-stroke epilepsy is related to different clinical factors (Copenhagen Stroke Study): 1. younger age (OR – 1.7/10 years, 95% CI 1.3-2.1), 2. increasing stroke severity at the onset of stroke (OR – 1.3/10 point decrease Scandinavian Stroke Scale, 95% CI 1.0-1.6), 3. lesion size (OR 1.2/10 mm, 95% CI 1.0-1.3), 4. intracerebral hemorrhage (OR – 3.3, 95% CI 1.3-8.6), 5. early seizures (OR 4.5, 95% CI 1.3-16.0).

Post stroke seizures are typically focal. It has been estimated on the basis of epidemiological studies that generalized seizures are diagnosed in 16%, partial seizures with secondary generalization in 25%, partial complex in 48% and partial simplex in 11%.

Prevalence of epilepsy among elderly may be even higher than it has been shown in official statistics because of common difficulties in differential diagnosis. In elderly symptoms due to complex partial seizures often are diagnosed as disorders of cerebral circulation, dementia or metabolic dysfunction.

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The vascular contribution to dementia

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Primary degenerative dementia (PDD), prototypically represented by Alzheimer's disease (AD) is usually distinguished from vascular dementia. The primary criteria are clinical and neuroimaging. It is becoming more recognized that many cases represent an overlap between the different etiologies, with a different contribution responsible for each case.

Nevertheless, theoretical and practical problems face this distinction. There are no gold standards, since even autopsy examination of demented persons cannot reveal definitely whether the cause of the cognitive decline is degenerative, vascular, or combined. Indeed, pathological criteria for vascular dementia have changed over the past few decades, and this was further complicated by the recognition of small vessel disease as a frequent contribution to cerebral pathology, particularly dementia in old age. It is unclear when vascular lesions (or AD pathology) should be regarded as coincidental and when it should be considered causative. Essentially, the same problem relates to neuroimaging data.

Lacking diagnostic gold standards, the clinical differentiation between vascular and degenerative dementia is established on clinical guesswork. Recent data suggest that the distinction is largely artefactual and lacking validity. Moreover, available evidence suggests overlap between dementia also in basic processes, e.g. cholinergic deficiency. The presumed distinction between vascular and degenerative dementia leads to attempts to discover different treatments for the two disorders, although the basic assumption may be incorrect. The implications for drug studies will be discussed.

MARKKU KASTE

Strategies to reduce the burden of stroke

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This presentation is based on the Helsingborg Declaration 2006, which reflects research achievements in stroke care. Declaration describes targets to be achieved by the year 2015 although local resources for stroke management differ widely between European nations and thus all countries will not achieve these optimal targets.

Stroke patients should be evaluated as soon as possible in hospitals that can provide acute stroke care and are equipped with adequate imaging modalities such as CT or MRI.

Streamlined multidisciplinary stroke care starts from the emergency call centre, which identifies a potential stroke patient. The emergency call centre should dispatch an ambulance for fast transportation to the nearest hospital with appropriate resources for acute stroke management.

Although resources currently differ between countries, all such efforts need to be made that each country will be able to provide a stepwise development of the essential infrastructure and personnel resources, namely multidisciplinary teams, stroke units and imaging facilities.

The outcome of patients managed in a dedicated stroke unit has been shown to be superior compared to that of patients managed in general medical wards. A stroke unit offers an organized approach to in-patient care through multidisciplinary care by a dedicated stroke team.

Minimum criteria for an appropriate stroke unit include the following items:

- Dedicated beds for stroke patients.