Risk Factors Associated with Ischaemic Stroke
Implications For Disease Prevention

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Contents

Summary .................................................. 132
1. Treatable Risk Factors ................................ 133
   1.1 Cardiac Disease .................................... 133
   1.2 Arterial Hypertension ............................... 137
   1.3 Diabetes Mellitus ................................... 137
   1.4 Hyperlipidaemia ..................................... 137
   1.5 Increased Fibrinogen Level ......................... 138
   1.6 Elevated Haematocrit ............................... 138
   1.7 Other Haematological Disorders and Coagulopathies 138
2. Avoidable Risk Factors ................................ 139
   2.1 Cigarette Smoking .................................... 139
   2.2 Alcohol Consumption ................................. 139
   2.3 Abuse of Other Drugs ............................... 139
   2.4 Intake of Oral Contraceptives ...................... 140
   2.5 Excessive Bodyweight ............................... 140
   2.6 Low Physical Activity .............................. 140
3. Other Risk Factors .................................... 141
4. Conclusions .......................................... 141

Summary

Ischaemic stroke is a major cause of death in industrialised nations. Many survivors of stroke bear a burden of permanent disability. This very often involves extreme individual suffering and puts great financial strain on healthcare systems.

It is beyond doubt that ischaemic stroke can partly be avoided. In order to reduce the incidence of stroke, 2 approaches to prevention are necessary. First, avoidable risk factors must be avoided by patients themselves. Secondly, treatable risk factors must be treated by physicians. However, efficient preventive strategies depend on the reliable definition and recognition of risk factors and their competent management.

In the last few decades, scientific research has identified certain disorders and conditions as definite risk factors and has meticulously assessed their significance for the causation of stroke. The significance of various other potential risk factors, however, remains elusive. The most important treatable risk factors for ischaemic stroke are cardiac disease, arterial hypertension, diabetes mellitus, hyperlipidaemia, increased fibrinogen level, elevated haematocrit, and selected haematological disorders and coagulopathies. The most important avoidable risk factors
Risk factors for stroke are biostatistical variables associated with an increased incidence of cerebrovascular disease. It has been pointed out that the risk factor profiles of the various subtypes of stroke (ischaemic stroke, haemorrhagic stroke, subarachnoid haemorrhage) are not identical. The following review will be limited to discussion of the risk factors for ischaemic stroke since this subtype of stroke is more common than the other types, and some of its risk factors can be avoided or others may be treated effectively.

For the last 3 decades, the risk factor model has been of great heuristic value for the investigation of stroke and its prevention. Risk factors, such as age and gender, genetic aspects, race, geographic location, season and climate, cannot be easily altered. However, other risk factors can definitely be avoided or influenced positively by medical intervention.

Those risk factors for ischaemic stroke that can be avoided or treated will be the primary topic of this review. Emphasis will be given to cardiac risk factors since many new concepts in diagnosis and treatment have emerged only recently.

1. Treatable Risk Factors

1.1 Cardiac Disease

Several cardiac disorders may cause ischaemic cerebrovascular accidents. The most important pathophysiological mechanism underlying these accidents is cardiogenic brain embolism. Most reports suggest that at least 1 of 6 ischaemic strokes is due to cerebral embolism of cardiac origin. The true proportion might be even higher since it has been shown that new and improved methods of investigation, for example transoesophageal echocardiography, can detect cardiac sources of embolism with greater reliability and, therefore, greater frequency.

Table I shows the most important cardiac causes of ischaemic stroke. In view of the complexity of possible therapeutic interventions, we recommend consultation of up-to-date manuals specialised in the treatment of the cardiac disorders in question. However, a brief description of the suggested treatments to reduce the risk of stroke in patients with cardiac disease is shown in table I.

1.1.1 Atrial Fibrillation

Atrial fibrillation is the most common cardiac disorder associated with ischaemic stroke and is therefore regarded as a major risk factor for stroke. Patients with non-rheumatic atrial fibrillation have a substantially increased risk of being affected by ischaemic stroke compared with patients without atrial fibrillation.

The stroke risk for patients with atrial fibrillation on average is 5% per year and increases with increasing age. There are indications that the risk for stroke in patients with paroxysmal atrial fibrillation is lower than that for patients with chronic atrial fibrillation.

Many investigators emphasise that the risk for stroke in patients with atrial fibrillation depends on the existence of additional cardiac disorders. Lone atrial fibrillation, i.e. atrial fibrillation without other clinical, electrocardiographic or chest x-ray signs of heart disease, in younger patients, particularly in men, has a stroke risk of less than 0.5% per year. This is true only if hypertension is absent. In elderly patients with lone atrial fibrillation, however, the risk for stroke increases to greater than 2% per year.

In the presence of additional cardiac disease, the risk of stroke in patients with atrial fibrillation increases. The combination of atrial fibrillation