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Research Article

SECONDARY STROKE PREVENTION: CHALLENGES AND SOLUTIONS¹Dr Syeda Gul-e-Najaf,²Dr Ali Imran,³Dr Rimsha Sehar¹MBBS,D.G Khan Medical Collge,Dera Ghazi Khan.²MBBS,King Edward Medical University,Lahore.³MBBS,Mohtarma Benazir Bhutto Shaheed Medical College,Mirpur,Azad Kashmir.**Article Received:** October 2020**Accepted:** November 2020**Published:** December 2020**Abstract :**

Stroke prevention represents a critical health challenge. Stroke is considered a major cause of mortality worldwide. In the united states, it is the fifth driving reason for death. It is also the leading cause of disability. There are different subtypes of stroke eg; carotid, lacunar, and cryptogenic. Generally, the main task in stroke reduction is to control the risk factors such as Hypercholesterolemia, hypertension, diabetes, and cardioembolism. There are different therapies and treatments(antiplatelet therapy, anticoagulation therapy, stenting, etc) to control these risk factors. The easiest way for stroke prevention is estimated to manage a healthy lifestyle with regular physical activities. In this review, all the risk factors and their treatments are discussed.

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INTRODUCTION :

Stroke is characterized as clinical, radiological, or obsessive proof of ischemia, including a characterized cerebral vascular domain^[1]. This is interesting among neurological sicknesses since it is preventable. It is assessed that \$25 billion is gone through for stroke every year in the United States^[2]. There are roughly 800,000 strokes each year, around 600,000 of which are repetitive occasions^[3]. Stroke is presently the fifth driving reason for death, yet it remains the main source of disorder in the USA^[4]. While there has been a consistent decrease in stroke frequency in developed nations, occurrence in progressing nations keep on increasing – representing 85% of the overall stroke burden^[5]. Once a stroke has happened, treatment alternatives are restricted and just accessible for a brief timeframe following the symptom beginning. Research on stroke cases and deaths shows that the estimated 500 000 new cases of stroke and the 150 000 deaths attributable to stroke each year^[2]. On the other hand approximately 3 million stroke survivors each year are estimated^[2]. Similarly, research on stroke prevention and its treatment surpasses that of other neurological diseases ^[6], a concerted international effort to prevent stroke could lead to substantial economic savings and reduction in human suffering^[6].

In considering stroke prevention, one should know that the instruments of infection hidden the clinical stroke disorder are very shifted, and consequently, preventive estimates should be custom fitted to the illness component. Generally speaking, 87% of strokes are ischemic, 9% are because of an intracerebral drain or hemorrhage (ICH), and 4% are expected to subarachnoid discharge^[7]. Among all strokes in one arrangement ^[8], about 19% were cardioembolic, 26% were lacunar, 15% were because of carotid infection, and about 36% remained cryptogenic (no unmistakable reason recognized) (Fig.

1). Stroke subtype is to some degree reliant on identity^[8].

Therefore, stroke avoidance has been viewed as the pillar in stroke management for over 50 years, and notwithstanding many years of examination in stroke anticipation, there stay essential difficulties in auxiliary stroke prevention^[9]. This review should be taken as a summary of secondary stroke prevention measures.

Stroke Prevention Strategies :

Stroke which is a chronic illness has a long inert period before its clinical symptoms clinical become clear. During this inert period, stroke hazard factors (determinants) impact pathophysiological changes that may prompt clinically show illness. The presence of different danger factors increases the probability of stroke^[10]. The normal history of persistent infection might be schematically spoken to by four phases of illness in which the prevention and intercession level has been compared (Table I^[11]). In Table 1 it is indicated that in early identification and prevention systems the initial two phases, "susceptibility" and "presymptomatic," are manageable. Primary and secondary stroke prevention is possible in these two phases so these might be considered as the "upstream" stages. When the danger factors are focused on and recognized through wellbeing advancement and screening, explicit mediation to forestall or impede pathogenetic tissue harm that could prompt clinical infection and handicap can be executed. The last two phases, where the attacks of the danger factors are very clear as "clinical sickness" and "Disability or recovery " are "downstream," stages. In these stages, most of our open door for anticipation has passed as we try to treat and restrict intense illness and inability. Our general clinical health objective is organized to intercede in the early or upstream stages^[11]. Some of the risk factors are discussed that play an important role in stroke prevention when treated

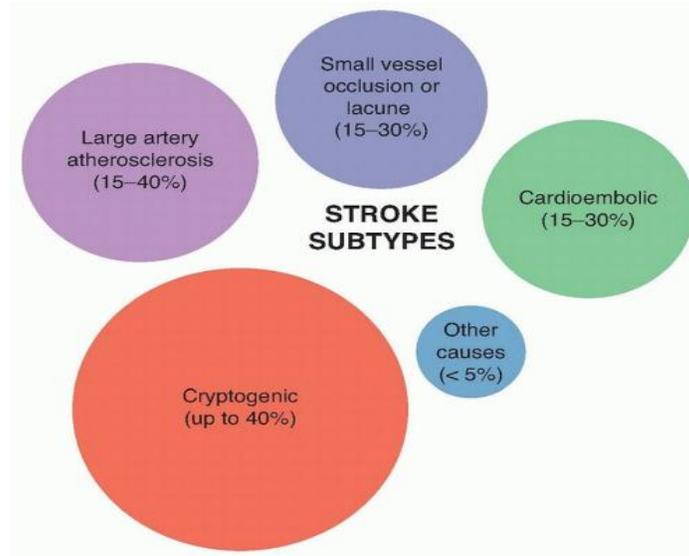


Figure 1 Stroke Subtypes

Table 1: Comparison between Prevention and intervention level and Disease Stage^[11]

Disease Stage	susceptibility	presymptomatic	Clinical	Disability or recovery
Prevention level	1	2	3	3
Intervention	Health promotion Specific intervention	Early detection, diagnosis, and preventive treatment	Acute treatment Rehabilitation	Acute treatment Rehabilitation

Hypertension a Risk Factor and Stroke Prevention :

Hypertension is a clinical problem in which blood pressure in blood vessels is constantly raised. For over 30 years, the proof has been convincing that there is a solid relationship between raised pulse and stroke, both ischemic stroke and ICH. The connection between pulse and stroke is a constant variable and free of other danger factors^[12]. The connection between hypertension and lacunar stroke is especially solid and may happen in people with no other stroke hazard factors. It has become bounteously evident that screening for hypertension and treatment of hypertension are significant and powerful in stroke anticipation. Various classes of antihypertensive prescriptions, including thiazide diuretic specialists, angiotensin-changing over compound inhibitors, angiotensin receptor blockers, beta-blockers, and calcium channel blockers, have all been appeared to diminish the danger for cardiovascular occasions including stroke^[13]. There might be a specific favorable position to the utilization of angiotensin-changing over catalyst inhibitors and angiotensin receptor blockers for stroke prevention^[13].

Diabetes a Risk Factor and Stroke Prevention :

Diabetes is one of the most important vascular risk factors for stroke and a high-yield target for preventive measures. Among patients with diabetes, the risk of vascular events is increased thrice compared to nondiabetics, and in combinations with other risk factors, the risk increases exponentially compared to individuals with those risk factors without diabetes^[14]. Intensive glyceimic control (defined as glycated hemoglobin,7%) was not associated with a significant reduction in the rates of stroke (fatal or nonfatal) among patients with diabetes, although there was a reduction of 16% in a combined vascular outcome^[15]. A recent meta-analysis of clinical trials comparing intensive glyceimic control vs standard glyceimic controls demonstrated a non-statistically significant 7% risk reduction among those in the intensive care group^[16]. Early, aggressive control of glyceimic has lasting benefits in vascular events in patients with type I diabetes, and the long-term favorable results of intensive glucose lowering among those with type II diabetes argues for early recognition of diabetes as the most effective way to reduce the risk of vascular events and stroke^[17]. Patients with diabetes frequently

have other vascular risk factors that should be aggressively controlled.

Hypercholesterolemia a Risk factor and Stroke Prevention :

Hypercholesterolemia is brought about by an inordinate take-up of high cholesterol diet prompting elevated levels of blood lipids. Critically, in literature and clinical trials up to 60% of recorded patients have significant levels of blood lipids including cholesterol^[18]. In secondary stroke prevention, this is another overall objective. Research demonstrates that the Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) trial gave proof of the advantage of statin treatment among patients with a TIA or stroke inside the past a half year and no proof of conceivable cardioembolic source (eg, atrial fibrillation)^[18].

Cardioembolism a Risk factor and Stroke Prevention :

Cardioembolism is brought about by impediment of the cerebral corridor because of blood coagulation made by underlying and utilitarian irregularities of the heart. As the total populace ages, the commonness of cardiovascular illness is on the ascent, just like the pace of cardioembolism. The greatest modifier of stroke danger in people with atrial fibrillation is anticoagulation. Atrial fibrillation might be answerable for 75,000 strokes in the United States, and emotional danger decreases are noted when nonvalvular atrial fibrillation is treated with antithrombotic therapy^[19]. Therefore, gadgets for long term electrocardiography estimations are being worked on. Although related examinations are in progress, until this point, non-vitamin K enemy oral anticoagulants don't have a preferred position over headache medicine for preventing stroke repeat in patients with embolic stroke of the dubious source. The best test in the prophylactic utilization of anticoagulation in the setting of atrial fibrillation revolves around the danger of ICH versus the advantage of preventing ischemic stroke^[19].

Carotid Artery Stenting for Stroke Prevention :

Research on stroke prevention demonstrates that the management of transient ischemic assault (TIA) is significant because conceivably lethal ischemic strokes can be prevented^[20]. Recognition of extracranial carotid atherosclerosis in these patients is advantageous because clinical treatment can be given, and in specific cases, the medical procedure can be performed. The patients with TIA due to extracranial carotid stenosis should be given concentrated clinical treatment. The pharmacological administration

includes antiplatelet treatment and statin use^[20]. Carotid endarterectomy and carotid course stenting decrease the danger of intermittent stroke in patients with suggestive extracranial carotid stenosis^[20]. The revascularization systems diminish the 90-day danger of ensuing ischemic stroke in patients with serious extracranial carotid artery stenosis^[20].

Lacunar Stroke and Prevention Therapies :

Lacunar stroke is a sort of ischemic stroke that happens when the bloodstream to one of the little supply routes profound inside the brain gets impeded. Many people who experience a stroke require long term treatment. This can incorporate medicine to treat hypertension, diabetes, or elevated cholesterol. After a lacunar stroke, a few people additionally require exercise based recuperation to reestablish work, word related treatment to improve aptitudes required for regular living, and language training to improve language abilities. Antiplatelet treatment with clopidogrel and ibuprofen, contrasted with headache medicine alone, was researched as optional anticipation after lacunar stroke in the SPS3 trial^[21]. There was no proof of a decrease in the paces of intermittent strokes utilizing double antiplatelets versus ibuprofen alone (2.5% versus 2.7% every year), expect an expansion in the danger of draining and mortality was noted in the double antiplatelet treatment gathering^[21]. In light of this, there is no proof to help the utilization of double antiplatelets to diminish the danger of repetitive stroke in the long term^[3].

Role of LifeStyle in Stroke Prevention :

Research on lifestyle management for primary and secondary stroke prevention shows that the way of life adds to the danger for myocardial^[22]. A study is conducted on a significant associate investigation of more than 114,000 people and distinguished eating routine and way of life factors with a significant bearing on bringing down stroke hazard^[13]. The 5 variables are weight record 25 kg/m², 30 min/day of moderate action, not smoking, unobtrusive liquor admission, and scoring in the top 40% on a solid eating routine score. For ladies, 54% of ischemic stroke hazard is inferable from absence of adherence to a generally safe way of life. For men, 52% of ischemic strokes may have been prevented. Along these lines, for the two people, a solid way of life immensely affects stroke hazard. It plainly should be the foundation of all doctor proposals for stroke prevention^[13].

CONCLUSION :

This study on secondary stroke prevention concluded that stroke is a preventable disease. Although this is a challenging task but is possible and for stroke prevention it is very important to focus on the prevention and treatment of risk factors. Research demonstrates that the easiest way for stroke prevention is to manage a healthy lifestyle with regular physical activities.

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