STROKE IN ELDERLY; IDENTIFICATION OF RISK FACTORS

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Background: This study was undertaken to identify stroke risk factors prevalent in our elderly population. ***Methods:*** The subjects included 100 consecutive stroke patients with recent stroke, at or above the age of fifty years, both sexes inclusive, who presented at medical units of Liaqat Medical College Hospital Hyderabad. A detailed history of the patients was taken, thorough clinical examination was done and various laboratory tests were carried out to identify all the possible risk factors for stroke in the subjects. ***Results:*** Most important risk factors prevalent in our population were found to be hypertension (64%), diabetes mellitus (29%), smoking (29%), heart disease (23%), obesity (17%) and hypercholesterolemia (15%). ***Conclusion:*** It is concluded that in elderly stroke patients, many risk factors are identified. Awareness of these risk factors, their early and effective treatment and adaptation of various preventive measures is warranted.

INTRODUCTION

Stroke is defined as focal neurological deficit due to vascular lesion [1]. It is the third commonest cause of death in developed countries [2]. Incidence of stroke increases dramatically with advancing age. Progressive carotid atherosclerosis, cardiac arrhythmias and emboli and vascular changes all contribute to this increased incidence of stroke in elderly [3].

Most important risk factors for old age stroke include cigarette smoking, hypertension, diabetes mellitus, left ventricular hypertrophy, prior stroke, transient ischemic attacks, extra cranial artery disease and coronary artery disease[4]. Other factors associated with increased risk of stroke include diabetes mellitus, impaired glucose tolerance, high systolic blood pressure, increased time needed to walk 15 feet, frequent falls, increased serum creatinine level, abnormal left ventricular wall motion, increased left ventricular mass on echocardiography, ultrasonic defined carotid stenosis and atrial fibrillation [5].

Left ventricular hypertrophy may be associated with ischemic stroke in patients with non-rheumatic atrial fibrillation [6]. During five years after myocardial infarction patients have a substantial risk of stroke[7].

Increased serum cholesterol is a primary risk factor for thrombo-embolic stroke[8], while it is an independent risk factor for ischemic stroke in diabetic patients [9].

Important risk factors *for* haemorrhagic stroke are history of hypertension, interruption of antihypertensive therapy, long working hours, overwork and a family history of stroke[10]. In blacks, important risk factors for intracerebral hemorrhage are found to be hypertension, alcohol use and smoking[11].

The aim of the present study is to identify the risk factors prevalent in our elderly subjects and suggest preventive measures.

MATERIALS AND METHODS

This study included one hundred cases of stroke with recent onset, all at or above the age of 50 years, both sexes inclusive. Diagnosis of stroke was made on the basis of clinical features and confirmed by C.T. Scan findings.

After diagnosis, a detailed history was taken with special reference to the presence of stroke risk factors, this included history of hypertension, diabetes mellitus, preexisting heart disease, smoking, dietary habits, use of alcohol or addictive drugs, occupation and life style. Body mass index was determined.

A thorough clinical examination was then performed with special emphasis on the search of all possible risk factors, this included general and systemic examination. Fundoscopy was done in most cases.

A number of investigations were carried out including C.T. Scan brain, X-ray chest, ECG, full blood count, urine detailed report, renal profile, lipid profile, clotting time and blood glucose level. Echocardiography and glucose tolerance test was performed in selected cases.

RESULTS

The present study included 100 patients (51 males, 49 female) of which 74 were in the age group of 50-69 years. Table-2 shows various laboratory investigations. Table-3 shows identified risk factor in stroke patients. Sixty-four patients (64%) were hypertensive, twenty-nine patients (29%) were diabetics, twenty-nine patients (29%) were regular smokers while 17 patients (17%) were declared obese, twenty three patients (23%) had pre-existing heart disease, twenty-five patients (25%) had raised serum cholesterol level and 2 patients (2%) had raised serum uric acid. Five patients (5%) had carotid bruit.

Table-1: Age and sex distribution in stroke patients

Age group	Male	Female	Total
50-59	14	16	30
60-69	22	22	44
70-79	10	7	17
80 and above	5	4	9
Total	51	49	100

Table-2: Levels of Blood Glucose, Serum Cholesterol, Serum Uric Acid, Serum Creatinine and Blood Urea in Stroke Patients

Blood glucose		**No. of Patients**
a.	70-120 mg/dl	27
b.	121-180 mg/dl	29
c.	181-220 mg/dl	24
d.	More than 220 mg/dl	20
Serum Cholesterol		**No of Patients**
a.	100-180mg%	60
b.	181-199mg%	15
c.	More than 200 mg%	25
Serum Uric Acid		**No of Patients**
a.	4-7mg%	98
b.	More than 7mg%	02
Serum Creatinine		**No of Patients**
a.	1.1 mg% or less	95
b.	More than 1.1 mg%	05
Blood Urea		**No of Patients**
a.	45mg% or less	92
b.	More than 45mg%	8

Table-3: Risk factors identified in stroke patients

Risk Factor			**No. of Patients**
Hypertension			
	a.	Total	64
	b.	Known Cases	54
	c.	Undiagnosed	10
Diabetes Mellitus			29
Smoking			29
Obesity			17
Heart Disease			
	a.	Total	23
	b.	A.F[(a)]	5
	c.	History of M.I [(b)]	6
	d.	LVH[(c)]and strain	11
	e.	C.M.P[(d)]	1
Drug addiction (heroin)			3
Hypercholesterinemia			25
Raised Haematocrit			2
Leukocytosis			5
Raised ESR			11

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Drug addiction (heroin)			3
Hypercholesterinemia			25
Raised Haematocrit			2
Leukocytosis			5*
Raised ESR			11*
Proteinuria			28*
Thrombocytosis			15*
History of TlA			93
History of Stroke			92
Carotid bruit			5

** Are predictors of prognosis*
I. Atrial fibrillation
II. Myocardial infarction
III. Left ventricular hypertrophy
Cardiomyopathy.

DISCUSSION

Incidence of stroke increases markedly with advancing age. This is due to the change which occurs in various organ-systems of the body with age.

Although, these changes occur normally in most human beings, these are accelerated and exaggerated by various risk factors in certain individuals.

This study included 100 stroke patients, all at or above the age of 50 years, both sexes inclusive. The most important risk factor for stroke in elderly patients, was hypertension. Hypertension [4,14] has been reported as the most important risk factor for stroke by various previous studies.[4,5,10,11]

The next important risk factor for stroke identified in this study is diabetes mellitus. Diabetes mellitus has been recognized as an important risk factor for stroke in many studies.[4,5,13,14]

Non-insulin dependent diabetes mellitus, its metabolic control and duration of diabetes, are important predictors of stroke in elderly, particularly in women. Hyperglycemia in the acute phase of stroke is associated with poor prognosis, and is significantly related to the infarct size regardless of presence of established diabetes.[17]

Smoking is another important risk factors for stroke. Many of the, smokers were also 18 hypertensive. Smoking has been described as risk 4,11 factor for stroke in various previous studies Obesity is another risk factor as described in various studies [19.20,21]. Excess obesity seems to influence the risk of stroke through its association with other disorders like hypertension, diabetes mellitus and other cardiovascular risk factors[22] Hypercholesterinemia has been regarded as primary risk factor for tnroinboembolic stroke[8,9].

Heart, disease is another important risk factor for stroke Atrial fibrillation is an important risk factor for stroke. Stroke in-patients with atrial fibrillation is generally more severe and outcome poorer than in-

patients with sinus rhythm Left especially when it is associated with atrial fibrillation[6].

Incidence of stroke increases after myocardial infarction. Risk of stroke is highest in the first 5 days mostly after anterior wall infarction[24]. A decreased ejection fraction and older age are both independent predictors of an increased risk [25]. History of previous transient ischemic attack or stroke, is a risk factor for future stroke[4].

Present study included three drug addicts. All were users of heroin [25]. Stroke has been reported in subjects using heroin.

Raised hematocrit, leukocytosis, raised ESR, raised blood urea and raised serum creatinine are all found in various types of strokes in a number of patients. All these are not actually risk factors but are prognostic criteria of stroke Patients with carotid bruit have a three fold increased risk of stroke [27,28].

It is concluded that a number of risk factors (and their combinations) for stroke are prevalent in our population. Their awareness, treatment and adaptation of certain preventive measures is essential.

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