Original article

Study of prevalence of microalbuminuria in recent ischaemic stroke at tertiary care hospital

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Abstract

Introduction: Stroke/ Cerebrovascular accident (CVA) is a heterogenous disease. Ischaemic and haemorrhagic strokes are the 2 main types of strokes, with very different pathogenesis and outcome.

Material and methods: Present research work Cross sectional observational study was completed at Dr. D. Y. Patil Medical College and Research Centre for last two years duration. 100 patients were included in our study. Ischemic stroke cases confirmed on CT brain and admitted in medicine/ neurology ward within 24 hours of onset of stroke fulfilling inclusion and exclusion criteria were enrolled as study subjects.

Results: Ver few subjects (13%) were below the age of 50yrs and maximum 35% were above age of 70yrs. Mean age of study participants was 64.09+11.5yrs and range of 32-80yrs. Gender wise distribution of study subjects. M:F was 2.03:1 Most common addiction among study participants was alcoholism (48%), one third were smokers and 27% were tobacco chewers.

Conclusion: The present study found prevalence of microalbuminuria in 46% of non-diabetic non hypertensive recent ischemic stroke patients and is consistent with previous studies associating Microalbuminuria with atherosclerotic vascular disease.

Keywords: microalbuminuria , ischaemic stroke

Introduction:

Stroke/ Cerebrovascular accident (CVA) is a heterogenous disease. Ischaemic and haemorrhagic strokes are the 2 main types of strokes, with very different pathogenesis and outcome. [1,2] It has been observed that in low to middle income countries such as India, stroke is one of the causes for premature deaths which appears to be due to demographic changes. Modifiable risk factors are seen in increased prevalence in our country.[3] Worldwide, stroke is the most common purpose of mortality after coronary artery disease (CAD). Also, it's far the maximum not unusual place purpose of persistent person disability. [4]The danger of stroke after age of fifty five years is 1 in five for ladies and 1 in 6 for men. More than four-5th of all strokes arise in growing countries.[3] Throughout world rise in stroke risk profile, lack of awareness and lack of prevention programmes serves to widen stroke prevention gap.[4] According to WHO 2009 report in India prevalence is 90-222 per lakh population and 6,398,000 DALYs (Disability Adjusted Life Years)[5] The most important modifiable risk factors for stroke are Smoking, diabetes mellitus, hypertension and deranged lipid profile appears to be the important modifiable risk factors.[6] Others include consumption of alcohol, drug abusers and people aged above 55 years.[7] The present study was an attempt to estimate the prevalence of microalbuminuria in non-diabetic, non-hypertensive recent ischemic stroke patients .

Material and methods:

Present research work Cross sectional observational study was completed at Dr. D. Y. Patil Medical College and Research Centre for last two years duration. 100 patients were included in our study. Informed written consent was obtained from patients/patient's relatives after explaining the purpose and benefit of study in a language they can understand. Institutional Ethics Committee clearance was taken before the start of study. Sampling method: purposive sampling.

All consecutive cases of acute ischemic strokes who met the inclusion criteria were chosen as a study participant till desired sample size was obtained.

 Inclusion criteria

1. Irrespective of gender Age above 12 years patients diagnosed with ischemic stroke

2. Confirmed ischemic stroke by CT scan brain, within 24 hours after the onset of symptoms.

3. No history of diabetes and hypertension or not on anti-diabetic and anti-hypertensive medications

 Exclusion criteria

a) Patients with hemorrhagic stroke.

b) Patients with diabetes, defined as fasting plasma glucose more than 126 mg/dl or 2-hour plasma glucose more than 200 mg/dl during an oral glucose tolerance test or use of antidiabetic drugs.

c) Patients with hypertension, defined as systolic blood pressure > 140 mmHg or

diastolic blood pressure > 90 mmHg or the use of anti-hypertensive medication.

d) Systemic infection including bacterial meningitis

e) Nephropathy, Urinary tract infections and abnormal urinalysis.

f) Women during menstrual phase and pregnant women

g) Major trauma and surgery.

Methodology:

Ischemic stroke cases confirmed on CT brain and admitted in medicine/ neurology ward within 24 hours of onset of stroke fulfilling inclusion and exclusion criteria were enrolled as study subjects. Detailed history, clinical examination and relevant laboratory investigations were carried out as per the study proforma.

Results:

Table 1: Age distribution of study subjects

Age group	Frequency	Percent
35-50yrs	13	13
51-60yrs	28	28
61-70yrs	24	24
71-80yrs	35	35
Total	100	100

Table show age wise distribution of study subjects. Ver few subjects (13%) were below the age of 50yrs and maximum 35% were above age of 70yrs. Mean age of study participants was 64.09+11.5yrs and range of 32-80yrs.

Table 2: Gender distribution of study subjects

Gender	Frequency	Percent
Female	33	33
Male	67	67
Total	100	100.0

Table shows gender wise distribution of study subjects. M:F was 2.03:1

Table 3: Presenting complaints among study subjects

Presenting complaints	Frequency	Percent
Weakness in limb	27	27
Fascial deviation	15	15
Slurred speech	15	15
Headache	14	14
Blurred vision	13	13
Others	12	12

Table shows presenting complaints among study subjects. Most common presenting complaint was weakness in limb (27%) followed by fascial deviation (15%), slurred speech (15%), headache (15%) and blurred vision (15%).

Table 4: history of addiction among study participants

Addiction	Frequency	Percent
Alcoholism	48	48
Smoking	31	31
Tobacco chewing	27	27

Table shows most common addiction among study participants was alcoholism (48%), one third were smokers and 27% were tobacco chewers.

Table 5: family history among study subjects

f/H/o	Frequency	Percent
Diabetes mellitus	48	48
Hypertension	36	36
Ischemic heart disease (IHD)	22	22

Table shows family history of diabetes, hypertension and IHD among study subjects. Most of them have family history of diabetes (48%) followed by hypertension (36%) and IHD (22%).

Table 6: Diet pattern among study subjects

Diet pattern	Frequency	Percent
Vegetarian	48	48
Mix	50	50
Non vegetarian	2	2
Total	100	100

Table shows half of the study participants were having mix type of diet and 48% were vegetarians.

Table 7: Scandinavian Stroke Score severity

Scandinavian Stroke Score	Frequency	Percent
0-30	15	15
31-50	24	24
>50	61	61
Total	100	100

 Table shows Scandinavian Stroke Score severity analysis found most of the study subjects (61%) were having score >50, 24% subjects were having score in range of 31-50 and few (15%) had score <30.

Table 8: distribution of continuous study variables among study subjects

Variables	Mean	Std. Deviation	Range
Age (in yrs)	64.09	11.51	32-80
BSL (mg/dl)	80.27	9.49	57-108
Hb1AC	5.293	0.41	4.5-6.0
Urine albumin (mg/L)	52.93	21.96	23-95
SSS	40.54	13.71	11-61
Exercise (in min)	75.84	19.35	30-113
Pulse (beats per min)	75.17	5.24	60-88
SBP (mmHg)	114.54	12.24	88-140
DBP (mmHg)	75.68	5.53	62-90
RR (per min)	25.04	2.01	20-30
Weight (in Kg)	79.32	9.2	60-98
Height (in meter)	1.61	0.09	1.4-1.8
BMI (kg/m^2)	30.56	3.5	23.08-41.73

Discussion:

Very few subjects (13%) were below the age of 50yrs and maximum 35% were above age of 70yrs. Mean age of study participants was 64.09+11.5yrs and range of 32-80yrs. Age group in our study is similar to the study by Maskey et al [8], where maximum patients belonging to age group > 60 years. Another study by Vaidya CV et al [9] had a mean age 61 years and Awad SM et al [103] had a mean age of 63.6 years. Very few(13%) of our patients were in the >40 age group which is comparable to a study by Aiyar et al [10] and Singh S et al [11] which had 9.2 percent and 8.3% were below the age of 40 years respectively.

The prevalence of microalbuminuria in study subjects was 42% whereas Singh et al [17]study had prevalence of microalbuminuria in 33.33 percent in non-hypertensive non diabetic group and 50% in hypertensive group. Another study by Sabharwal RK et al [12] found 33.3% prevalence in hypertensive subjects. Bigazzi et al[106] reported 40% prevalence in a group of 123 patients with essential hypertension. PREVEND study [13] and HUNT study [14] the prevalence was 5-7% in non-diabetic non-hypertensive healthy subjects. Findings from hypertensive as well as non-hypertensive study findings conclude that there were already having some kind of endothelial dysfunction which is the basic pathology of microalbuminuria rather than presence or absence of one or more risk factor of stroke like hypertension and diabetes.

When comparing age with microalbuminuria, the mean age of patients with microalbuminuria was 62.5 years whereas the mean age of patients without microalbuminuria was 65.2 years. when comparing the age between patients having microalbuminuria and patients without microalbuminuria there was no statistically significant difference in age of two groups thereby indicating that age is not a risk factor for microalbuminuria. Also, there was no strong and significant correlation between microalbumin value and age of study subjects. Whereas in contrast to our study PC Mathur et al [15] and Singh S et al [11]study showed association of microalbuminuria with age. This variation in study findings may be due to variation in study population and inclusion exclusion criteria.

No correlation between blood pressure at presentation and urine albumin excretion in patients with or without microalbuminuria was found. The plausible explanation is that there is a certain degree of acute dysautonomia in acute stroke events that may not reflect the actual blood pressure of the patient. Findings of our study are similar with Singh S et al.[11]

The prevalence of microalbuminuria in patients with BMI>24.9 kg/m2 was 41.6%. A study done by Pavan M et al found 48% prevalence in obese patients.[12] among microalbuminuria and obese subjects showed high prevalence of microalbuminuria and obesity as a significant risk factor for microalbuminuria, finding variation is due to difference in inclusion exclusion criteria and outcome variable of interest.

Conclusion:

The present study found prevalence of microalbuminuria in 46% of non-diabetic non hypertensive recent ischemic stroke patients and is consistent with previous studies associating Microalbuminuria with atherosclerotic vascular disease.

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