CT PROFILE AND RISK FACTORS OF 200 PATIENTS WITH STROKE ADMITTED IN MEDICAL UNIT. A SINGLE CENTER STUDY

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ABSTARCT

Objective: To determine the frequency of hemorrhagic or ischemic stroke in patients presenting to medical units on the basis of Computed tomography (CT) scan.

Material and Methods: This descriptive, observational, single center study was carried out in the Department of Medicine, Khyber Teaching Hospital Peshawar from June, 2017 to June, 2018. Two hundred stroke patients admitted in medical units were study after confirming the diagnosis by doing CT scan. All those patients who developed focal neurological deficit that lasted for more than 24 hours were included in the study. Patients with focal neurological deficit due to cause other than vascular insult were excluded from the study. All the CT scans were reported by a consultant radiologist and data was recorded on preformed proforma.

Results: Two hundred patients with stroke were studied and CT scans were obtained. Out of 200 patients, 114 were male and 86 were female in a ratio of 1.3:1 respectively. Mean age of the patients was 52±6.5 SD years. Median age was 51 years and mode age 43 years. Out of 200 stroke patients with CT reports, 68 (34%) patients had hemorrhagic stroke and 132(66%) patients had ischemic stroke.

Key words: Stroke, CT scan, Hemorrhagic stroke, Ischemic stroke.

Conclusion: Ischemic stroke is more common than hemorrhagic stroke in our community. Hypertension, dyslipidemia, diabetes mellitus are the three most common risk factors of stroke.

INTRODUCTION

Stroke is focal/global neurological deficit resulting in loss of cerebral functions, with symptoms lasting more than 24 hours or leading to death due to some vascular insult. There are two types of stroke. Ischemic stroke is caused by vascular occlusion due to thrombosis in situ or embolism from distant site ultimately resulting in ischemic stroke. Hemorrhagic stroke is caused by rupture of artery supplying the brain. As a result, the affected area of the brain fails to perform normal functions of the body, leading to paralysis of one or more limbs, difficulty in speech and articulation, difficulty in swallowing and visual problems. Stroke is a global health problem. It is the leading cause of adult disability and is the second most common cause of death. 1
The incidence of stroke was decreased by 10 % in developed countries between 1990 and 2010 but increased in the developing world. It is also on rise in Asian countries like Pakistan where its incidence has increased putting a lot of burden on the economy and health services of whole country. Two third of cases occur above age 65 years. 2,3,4
Differentiation between hemorrhagic stroke and ischemic stroke is compulsory as further management depends on the type of stroke. Patients with ischemic stroke may need safe administration of thrombolytics or anti thrombotic drugs. No specific clinical feature differentiate between the two types of stroke (Hemorrhagic or ischemic) in majority of cases. So the only confirmatory test is radiological imaging of the brain in the form of CT scan or Magnetic Resonance Imaging (MRI). Of the two, Non contrast CT scan is accurate, safe and non-invasive investigation of choice to distinguish between cerebral hemorrhage and infarction. 5, 6CT scan is also superior to MRI for detecting the intracranial haemorrhage of less than 48 hour duration and correct site of lesion. 7
Hypertension is a well-known major risk factor for stroke and it affects over 75 million people over 20years of age in United States. Because of its high prevalence, stroke risk in population is about 40%. 8,9
The other common risk factors are old age, diabetes mellitus, coronary artery disease, atrial fibrillation, smoking, obesity and dyslipidemia. Diabetes is the second commonest cause of stroke after hypertension. 10, 11
The purpose of the study was to find out the frequency of the two types of stroke and to stratify the risk factors involved in stroke. By stratifying risk factors, we would be able to treat or modify the modifiable risk factors.

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Material and Methods:

This descriptive, observational, single center study was conducted in the department of medicine, Khyber Teaching Hospital Peshawar from June, 2017 to June, 2018. Total 200 admitted patients with stroke were selected through non-probability purposive sampling technique. All patients with focal/global neurological deficit due to vascular insult and which lasted for more than 24 hours were included in the study. Informed consent was taken

from all patients and those who were willing were included in study. Patients who presented with focal or global neurological deficit due to other cause like tumors or infection were excluded from the study. More over all patients who recovered within 24 hours were also excluded from the study. Patient who did not consent were excluded from the study.

A detailed history and relevant neurological clinical examination was performed by one the author. All patients under went CT scan brain which was reported by consultant radiologist of the same hospital. Other relevant investigations like ECG, full blood count, blood sugar, renal function tests, and liver function tests were performed from the hospital laboratory by an experienced pathologist. Specialized test like lumber puncture was performed where required to exclude other pathology.

History, findings of clinical examination and investigations were recorded on the preformed proforma. SPSS version 20 was used to analyze the data. Pearson Chi Square and P values were calculated where required. P-value less than 0.05 was considered significant.

Results

Total 200 patients with stroke were study in a tertiary care hospital Peshawar. Mean age of the patients was 52.16±10 SD. Mean age of male was 53.5±11.1SD with minimum age 38 years and maximum age 75 years. Mean age of the female was 49.6±6.95SD with minimum age 38 years and maximum age 68 years as shown in table 1.

In our study, 130 (65%) were male and 70 (35%) were female. Male to female ratio was 1.85:1 as shown in table 2.

We divided the ages of all patients into age groups. 34% of the patients were in 36-45 years age group, followed by 46-55 years (31%). The age group distribution is shown in table 3.

Frequency of risk factors in stroke is shown in fig. 1. Hypertension was the commonest risk factor (78%), followed by dyslipidemia (74%), diabetes mellitus, coronary artery disease, smoking, obesity and atrial fibrillation in descending order.

In table 4 (A), p value and chi square test values has be calculated by comparing two variables i.e. hypertension and hemorrhagic stroke. In the same table frequency of hemorrhagic stroke has also been calculated.

In table 4 (B), p value and chi square test values has be calculated by comparing two variables i.e. hypertension and ischemic stroke. In the same table frequency of ischemic stroke has also been calculated.

TABLE NO 1: Age Statistics

Total Population		Male	Female
Mean	52.1	53.5	49.6
Median	51.0	52.0	49.5
Mode	43.0	60.0	43.0
Std. Deviation	10.0	11.1	6.95
Minimum	38.0	38 .0	38.0
Maximum	75.0	75 .0	68.0

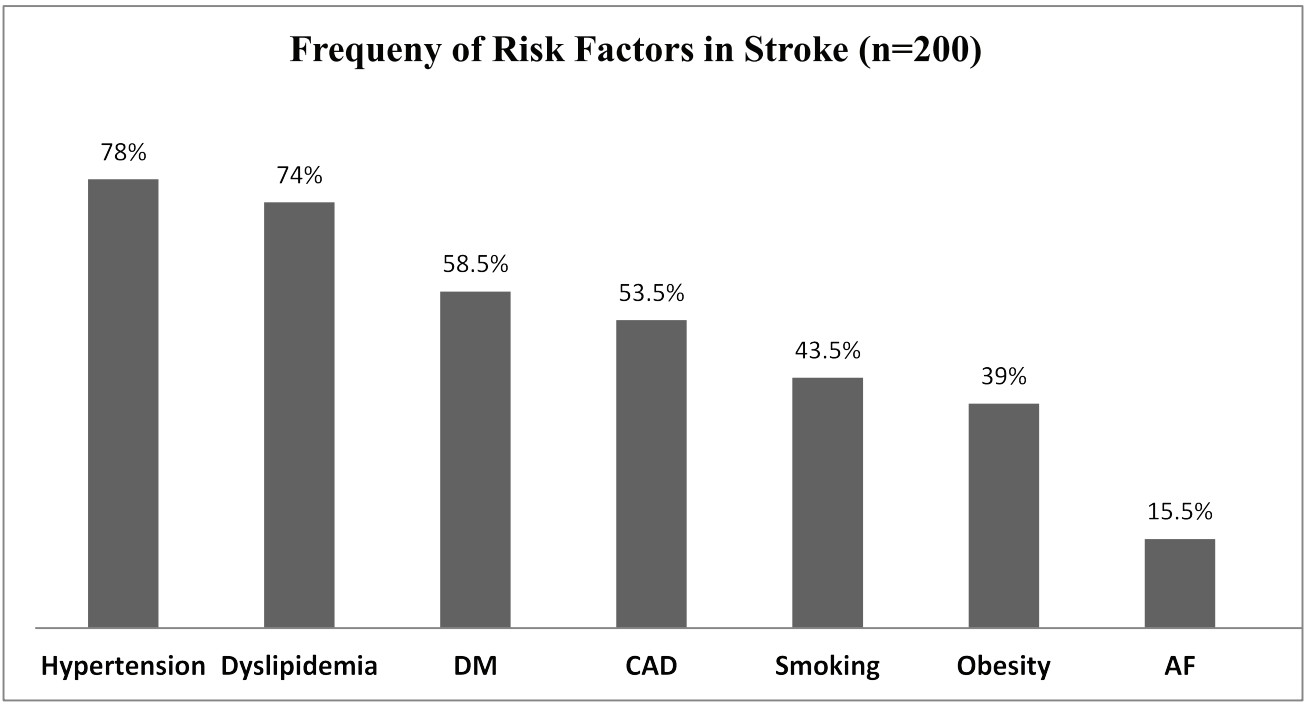
TABLE NO 2: Gender Distribution

Gender	Frequency	Percent
Male	130	65.0
Female	70	35.0
Total	200	100.0

TABLE NO 3: Age group Distribution

Age Groups	Frequency	Percent
36 -45	68	34.0
46 -55	63	31.5
56 -65	41	20.5
66 -75	28	14.0
Total	200	100.0

Fig 1



DM: Diabetes Mellitus CAD: Coronary Artery Disease AF: Atrial Fibrillation

TABLE NO 4 (A): Hemorrhagic Stroke * Hypertension Crosstabulation
Count

		Hypertension		Total	Pearson Chi Square	P Value
		Yes	No			
Hemorrhagic Stroke	Yes	60	8	68	6.290	0.012
	No	96	36	132		
Total		156	44	200		

Significant P-Value= <0.05

TABLE NO 4 (A): Ischemic Stroke * Hypertension Crosstabulation
Count

		Hypertension		Total	Pearson Chi Square	P Value
		Yes	No			
Ischemic Stroke	Yes	96	36	132	6.290	0.012
	No	60	8	68		
Total		156	44	200		

Significant P-Value= <0.05

DISSCUSSION

In developing countries like Pakistan, stroke is one of the major causes of both morbidity and mortality especially elderly people. Despite new post-stroke management strategies, its affectees are leading a miserable life including their whole family and sometimes whole community. Moreover it not only puts huge work load on the hospital resources but also affects the economy of the country badly.

Early management of stroke starts after recognizing whether the stroke is ischemic or hemorrhagic. This early management can ameliorate the disability if not totally saved.

In our study, mean age of the patients was 52.16±10SD years. In two local studies conducted by Khan N et al12 and Masood CT et al13mean ages of 54.5 years and 54.6 years wererecorded in their studies respectively which nearly coinciding our study. A study conducted in Japan reported mean age of 68 years in stroke patients which is higher than our study. 14

In our study, male gender was dominant (130 vs. 70) in ratio of 1.85:1. This dominancy was also proved in other studies as well. 14,15This male predominance may be due to easy approach to health care facility, low social status of female in our male dominant societies and high prevalence of risk factors among male patients.

In our study, 132 (66%) patients suffered ischemic stroke while 68 (34%) suffered hemorrhagic stroke. In most of the studies conducted in Pakistan or abroad, ischemic stroke was more prevalent than hemorrhagic stroke. A study conducted in India showed ischemic stroke in 72% and hemorrhagic stroke in 28% of population.16A study in Egypt showed 56% prevalence of ischemic stroke. 17 Another study conducted abroad showed ischemic stroke in 200 patients and hemorrhagic stroke in 28 patients. This value is quite higher than our study. Local studies conducted by Khan N et al12, Masood CT et al13, Ahmad F et al19 and Almani SA et al15 showed higher incidence of ischemic stroke as compared to hemorrhagic stroke (55% vs. 45%, 72% vs 28%, 71% vs 29 and 78% 2s 22%) respectively.

Stroke is a major problem in developing countries like Pakistan. In order to reduce its burden in the society, we need to identify the preventable and non-preventable risk factorand then try to modify it. Preventable risk factors like diabetes mellitus, hypertension, dyslipidemia, obesity, valvular heart lesions, cardiac arrhythmias, thyroid diseases, smoking, sedentary life style and poor dietary habits can be intervened and modified if encouraged at society level.

Hypertension was the major modifiable risk factor, involved in 78% of stroke cases in our study.The population based risk of hypertension for stroke is high (40-60%) in various studies.20,21Study conducted by Somasundaran A et al showed prevalence of hypertension in 63% of stroke patients and was the leading factor causing stroke. 16Hypertension was the most frequent risk factor (68%) in study conducted by Massood CT et al. 13Marwat MA and Khan N reported hypertension as risk factor in 75% and 78% of patients in their studies respectively. These results are nearly similar to my study. 22, 12

Dyslipidemia was the 2nd most common risk factor (74%), followed by diabetes mellitus (58.5%), coronary artery disease (53.5%), smoking (53.5), obesity (39%) and atrial fibrillation (15.5%). A local study conducted by Khan NI, Smoking was the most common risk factor (58%) followed by Hypertension, dyslipidemia, diabetes mellitus, obesity and then coronary artery disease. 23Smoking was 5th commonest risk factor in our study. This high percentage of smoking may be due to high prevalence of smoking in that territory. Studies conducted by Khan N and Marwat MA, ischemic heart disease was the 2nd most common risk factor followed by diabetes mellitus while in our study dyslipidemia was the 2nd most common risk factor followed by diabetes mellitus. 12, 22 Another observation worth mentioning is that there is significant correlation between hypertension and both hemorrhagic and ischemic strokes (P value >0.05) as shown in table 4 (A, B)

CONCLUSION

In our society, ischemic stroke is more common than hemorrhagic stroke. Hypertension, dyslipidemia, diabetes mellitus and ischemic heart diseases are the commonest preventable risk factors of stroke. Awareness programs for prevention and good control of these risk factors is the cry of the day.

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