FREQUENCY OF UNDIAGNOSED HYPERTENSION IN PATIENTS PRESENTING WITH STROKE

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ABSTRACT

Objective: To determine the frequency of undiagnosed hypertension (HTN) in patients presenting with stroke.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: Department of medicine, Combined Military Hospital (CMH) Kohat from June 2011 to June 2012.

Material and Methods: A total of 190 patients with stroke were included in the study with non-probability, consecutive sampling. Written informed consent and demographics of patients were obtained and permission of the hospital ethical committee was taken. Detailed past history was obtained especially focusing on whether a known hypertensive patient or using any antihypertensive medication. All the patients were subjected to detailed physical examination. Blood pressure (BP) was measured by using standard mercury sphygmomanometer on two different occasions 10 minutes apart and the patient was labeled as hypertensive if both readings showed equal to or more than 140/90mmHg of blood pressure.

Results: The mean age of patients was 46.31 ± 15.30years. There were 126 (66.3%) males and 64 (33.7%) females. The mean systolic BP of patients was 125.59 ± 19.97mmHg while diastolic BP was 86.32 ± 12.62 mmHg. In this study, there were 64 (33.7%) cases who had undiagnosed HTN before stroke. The difference was insignificant among different age groups and both genders (p-value>0.05).

Conclusion: The frequency of undiagnosed HTN is high in patients presenting with stroke which calls for a proper screening program to diagnose and treat HTN at early stage to prevent such deadly complications.

Keywords: Hemorrhage, HTN, Ischemia, Stroke.

INTRODUCTION

Stroke is the abrupt onset of neurological deficits that corresponds to interruption of vascular supply to a specific brain region and is one of the leading factors of morbidity and mortality worldwide. Hypertension (HTN) is the major risk factor for stroke and globally, approximately two-thirds of strokes are attributable to raised blood pressure. Despite the availability of a wide range of antihypertensive agents, almost two-thirds of hypertensive patients have poorly controlled blood pressure (BP)[1,2]. HTN may remain for prolonged periods in the individual without being diagnosed and may manifest only after causing serious irreversible complications[3].

Stroke is one of the leading factors of morbidity and mortality worldwide. It is the third most common cause of death in developed countries killing about five million people each year[4]. According to a data from the World Health Organization, HTN and cerebro-vascular accident are an emerging health problem in the developing countries and it has been estimated that from 1990-2020, cerebrovascular mortality will be much higher in the developing countries as compared to the developed countries of the world[5]. Estimation of stroke risks in population is not only helpful for healthcare providers but it is also important to identify persons at increased risk and to have proper screening and treatments[6].

HTN is prevalent in about 20% of adult population in most developed countries. In a study the prevalence of undiagnosed HTN was

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found to be 14.4%[3]. Risk of stroke can be reduced by at least 38% with adequate control of HTN[7]. There is a need to have HTN screening programmes at the national level that should focus on improving awareness in the community regarding early detection of HTN and help reducing the overall burden of BP related complications[3].

Thus this present study has been designed to determine the frequency of undiagnosed HTN in patients presenting with stroke. So that the burden of HTN could be identified in our study population and could have a policy recommendation at national level to have an effective screening program of population at high risk of stroke.

MATERIAL AND METHODS

This cross sectional study was conducted in the department of medicine, Combined Military Hospital (CMH) Kohat from June 2011 to June 2012. Patients of both genders, male and female between 30 to 80 years of age with either ischemic or a hemorrhagic stroke or both were included from medical units of CMH Kohat admitted through casualty and outpatient department. Patients with history of recurrent strokes, chronic renal failure, valvular heart disease and patients on anti-coagulant therapy and bleeding disorders were excluded from the study. A total of 190 patients fulfilling inclusion criteria and diagnosed with stroke during the study period were included in study by consecutive sampling method.

Informed consent of patient or attendant was taken after explaining the study protocol. Stroke was diagnosed on computed tomography (CT) scan brain either showing infarct or hemorrhage. We took detailed history from patient/relative and past medical records were thoroughly checked to exclude any confounders and to control bias in the study results. All the patients were subjected to detailed physical examination. BP was measured by using standard mercury sphygmomanometer on two different occasions 10 minutes apart and the patient was labeled as hypertensive if both readings showed equal to or more than 140/90 mmHg of blood pressure. All the information was recorded in a pre designed proforma. Strictly exclusion criteria were followed to control confounders and bias in the study results. The collected data was entered and analyzed through statistical package for social sciences (SPSS v. 16). Descriptive statistics were used to calculate mean and standard deviation for quantitative variables and frequency with percentages qualitative variables. Chi-square test was used to associate undiagnosed HTN with age groups and gender. A *p*-value < 0.05 was considered significant.

Table-1: Distribution of undiagnosed hypertension in Patients with Stroke.

Undiagnosed HTN	Frequency	Percentage
Yes	64	33.7%
No	126	66.3%
Total	190	100.0%

Table 2: Comparison of undiagnosed HTN with respect to different age groups and gender.

	Undiagnosed HTN		Total	*p*-value
	Yes	No		
Age groups				
30-50years	43 (67.2%)	96 (76.2%)	139 (73.2%)	0.382 **
51-70years	10 (15.6%)	16 (12.7%)	26 (13.7%)	
>70years	11 (17.2%)	14 (11.1%)	25 (13.2%)	
Gender of patients				
Male	42 (65.6%)	84 (66.7%)	126 (66.3%)	0.886 **
Female	22 (34.4%)	42 (33.3%)	64 (33.7%)	

**Difference is insignificant at 5% level of significance.

RESULTS

In this study a total of 190 patients of stroke were included having mean age of

46.31 ± 15.30 years. There were 126 (66.3%) males and 64 (33.7%) females (fig-1). The mean systolic BP of patients was 125.59 ± 19.97 mmHg while diastolic BP was 86.32 ± 12.62 mmHg. In this study, there were 64 (33.7%) cases who had undiagnosed HTN before stroke which was diagnosed on presentation (table 1). Among the cases who were labeled to have undiagnosed HTN, 43 (67.2%) cases were of age 30-50years, 10 (15.6%) cases were of age 51-70 years and 11 (17.2%) cases were of age >70years. The difference was insignificant (*p*-value > 0.05) among different age groups (table-2). Among the cases who were labeled to have undiagnosed HTN, 42 (65.6%) cases were males while 22 (34.4%) were females. The difference was insignificant (*p*-value > 0.05) between both genders (table-2).

DISCUSSION

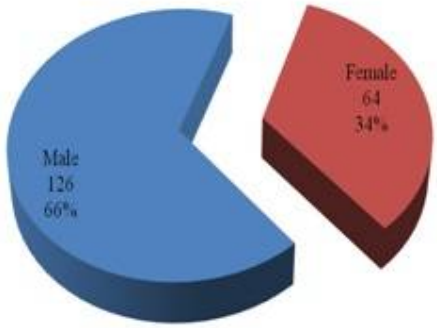
The incidence of stroke varies among different population. In United States the incidence is about 200 patients per 100,000 population while in Pakistan it is close to 250 per 100,000 population which means that there are 350,000 new stroke patients every year in this country. This is because high BP being a major risk factor for stroke is very common. A national health survey revealed that more than 30% population above age 45 is suffering from high BP, most of whom are undiagnosed and uncontrolled[8].

At the beginning of 21st century and emerging of new era, cerebrovascular disease is a major cause of death and disability worldwide. Stroke is defined as the rapidly developing symptoms and / or signs of focal loss of cerebral function with no apparent cause other than that of vascular origin[9-12].

Most of the major risk factors for stroke are modifiable and need awareness, regular use of medication and changes in life style for prevention. The national stroke prevention program should initiate and coordinate public awareness campaigns and develop guidelines to reduce the incidence, morbidity and mortality of stroke in Pakistan[13].

Stroke is the most important single cause of severe disability in adults and the second most common cause of death after coronary heart disease. In developing countries, increased life expectancy has modified the pattern of cause-specific mortality, with a higher burden of cardiovascular diseases[14].

Up to 50% of strokes may be attributable to elevated BP and HTN is the most important modifiable risk factor for stroke. The risk of stroke has been shown to have direct relationship to elevation of both systolic and diastolic BP in men and women of all ages; the strongest association being with systolic BP. The risk of stroke is increased by about 25% with each 10 mmHg rise in systolic BP and with diastolic BP of more than 110 mmHg; risk is 15 times more than of individual with less than 80 mmHg. The factors responsible for the inadequate level of BP control include treatment resistant high BP, recent start of drug



Figure–1: Distribution of gender of patients.

therapy, patient's non compliance with treatment, and suboptimal care[15-16]. HTN is a major health problem in Pakistan with a prevalence of 17.9% in adult population; there are an estimated 10 million hypertensives[17].

Diagnosis of stroke is clinical and by neuro-imaging, but CT or magnetic resonance imaging (MRI) brain scan is necessary for characterizing the stroke subtypes[18].

Epidemiological studies have reported different prevalence of undiagnosed HTN in apparently healthy individuals. Literature shows that it ranges from 4.8% to 8% among healthy individuals who suffered from unrecognized HTN[19].

In this study we investigated the frequency of HTN in stroke patients and included 190 cases of stroke with mean age of 46.31 ± 15.30 years. Minimum age of patients who presented with stroke was 30 years while maximum age of patients was 80 years. Literature also reported that the incidence of stroke increases exponentially from 30 years of age. There were more cases who presented within age range of 30-50 years (73.2%), while 13.7% cases presented in age 51-70 years while 13.2% cases presented in age >70 years[20]. Advanced age is one of the most significant stroke risk factors. 95% of strokes occur in people age 45 and older, and two-thirds of strokes occur in those over the age of 65[21].

In our study, Male-to-female ratio was observed as 2:1. This showed that male cases are at more risk of stroke as compared to females. One study also reported male-to-female ratio as 2.5:1 while another study reported male-to-female ratio as 1.7:1 in which males were almost double of females[22]. Higher ratio in male patients is due to presence of other risk factor like smoking and most of patients belong to older age group.

In our study, the mean systolic BP of patients was 125.59 ± 19.97 mmHg and diastolic BP was 86.32 ± 12.62 mmHg and there were 64 (33.7%) cases who had undiagnosed HTN before stroke which was diagnosed after stroke. HTN was found in 56% in another study which is nearly similar to that reported by other researchers which ranges from 49% to 58%.[17]. While one study reported higher prevalence of HTN with stroke and reported nearly 74% of patients who had stroke suffered from raised BP[23].

CONCLUSION

The frequency of HTN is high in patients who presented with stroke. So screening of patients of stroke for presence of HTN should be done to manage patients with stroke comorbid with HTN.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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