

Prevalence of hypertension among stroke patients at Tikrit Teaching Hospital

Omar S. Sallman,

Dept. of Medicine, College of Medicine, Tikrit University

Abstract

Hypertension is the most important modifiable cause of stroke. The aim of this study was to find the incidences of hypertension as important risk factor in stroke patients presenting at Tikrit teaching hospital from August 2007 to February 2008. One hundred and twenty nine patients admitted to Tikrit Teaching Hospital between 2007 and 2008 with a clinical diagnosis of stroke were included in this study. All patients routinely had a brain CT within 72 hours of admission to determine the type of stroke, 100 patients had been proved to have stroke on CT scan. Hypertension was found to be the most common risk factor in this study. Out of 100 Patients with confirmed stroke on C.T scan, 72 (72%) patients were male and 28 (28%) were female (M:F 2.5:1). Hypertension was found in 58 (58%) patients in which 42 patients were male (72.41%) and 16 patients were female (27.58%). Peak stroke age 61-70 years in male (15 cases) and 51-60 patients in female (7 cases). It is very important to detect and treat hypertension because it is a leading cause of stroke.

Key words: cause of stroke, Hypertension, risk factor, brain CT

Introduction

Stroke is defined as rapid onset (over minutes) of focal CNS signs and symptoms lasting for 24 hrs or more with unknown cause or secondary to other diseases. It is major neurological disease of our times (1.5/1000/year) increase with age to 10/1000/year at 75 years) (1). It is the cause of one in eight deaths and constitutes a formidable burden of disability and misery for the patients and their relatives and the wider community (2,3). Stroke occurs predominantly in middle and late years of life. Most ischaemic strokes occur between the ages of 71 and 80 years while most haemorrhagic strokes between 60 and 70 years (3). Stroke makes a considerable contribution to morbidity and mortality and is one of the top four causes of death worldwide (4). Stroke is the third most common cause of death after ischaemic heart disease and cancers, not only in developed countries, but worldwide, The incidence and mortality of stroke vary greatly among different populations and has declined considerably in several foreign studies (5).

According to a consensus statement on stroke ischaemic stroke accounts for 69 to 91 percent while haemorrhagic stroke 9 to 31 percent of a first stroke (6-10). A large number of patients with stroke are being

admitted in neurological department in hospitals, Some of these die in hospitals while a significant proportion are left with partial or total disability. Therefore, it is an important public health problem and a burden to health care providers and to the community at large because of the amount of effort that has to be invested in the planning and provision of health care. This is probably the result of better preventive measures. The Besancom Stroke Registry reported an in hospital mortality of 13.6%, with the highest mortality in patients with primary intracranial hemorrhage (11). Measures should be taken to prevent cerebrovascular disease (12).

Independent predictors for poor outcome were: age >70, patient who deteriorated within 48 hours of admission, initial loss of consciousness, complete motor deficit, major cognitive syndrome, hyperglycaemia, female and regressive stroke onset. Age, intracerebral bleed, diabetes mellitus and cardiac disease were also poor predictors of outcome in the study by Lefkovitis et al (13).

Common risk factors of stroke are hypertension, diabetes mellitus, coronary artery disease, atrial fibrillation, physical inactivity and alcohol. Among these a

number of risk factors are modifiable and treatable (14,15).

The aim of this study to find the prevalence of hypertension among stroke patients.

Subjects and Methods

One hundred and twenty nine patients admitted to Tikrit teaching Hospital between 1/8/2007 and 1/3/2008 with a clinical diagnosis of stroke was included in the study. All patients routinely had a brain CT within 72 hours of admission to determine the type of stroke, 100 patients had been proved to have stroke on CT scan.

On admission a detailed history with a special emphasis on hypertension was recorded. Presence of other risk factors like smoking, diabetes mellitus, coronary artery disease, atrial fibrillation and dyslipidemia was also evaluated. General physical and neurological examination was carried out in all patients to diagnose and find possible underlying risk factors of stroke.

In all cases routine investigations including full blood count, ESR, blood sugar, ECG, complete urine examination, were carried out. In selected patient's serum lipid profile, X-ray Chest, echocardiography, and Prothrombin Time were done.

Patients above 20 years of age of either sex with their C.T scan brain showing cerebral infarction or intracerebral hemorrhage were included in the study. Patient below 20 years of age were excluded from study; (3) patients.

Results

Out of 100 Patients with confirmed stroke on C.T scan, 72 (72%) patients were male and 28 (28%) were female (M:F 2.5:1). Peak stroke age 61-70 years in male (14 cases) and 51-60 patients in female (6 cases). Age and sex and hypertension is presented in table below. Cerebral infarction was found in 73 patients (73%) while 27 (27%) had intracerebral hemorrhage on CT scan. Hypertension was found in 58 (58%) patients in which 42 patients were male (72.41%) and 16 patients were female (27.58%). In hypertensive patients infarction was seen in 45 cases (77.58%) and cerebral hemorrhage in 13 cases (22.41). Out of 45 patients with

hypertensive cerebral infarction 33 were male and 12 were females, In hypertensive cerebral hemorrhage 9 were male and 4 were female. Age, sex, hypertension and type of stroke is presented in (table 1). Other risk factors were diabetes mellitus (31) patients, smoking (26) patients, cardiovascular diseases (22) patients and dyslipidemia (10) patients (table 2) and more than one risk factor was present in certain patients.

Discussion

Hypertension is the most powerful risk factor for stroke. It is strongly related not only to atherothrombotic brain, but also to intracerebral and subarachnoid hemorrhage (Shimizu et al., 1984). The percentage difference in stroke risk associated with a given difference in blood pressure is similar, in males and females, at all levels of blood pressure. Stroke risk about doubles with each 7.5 mmHg increase in the usual diastolic blood pressure (MacMahon et al, 1990)(13,14).

This increases with age and is higher in men than in women (14). In Chinese and Australian studies risk of stroke was higher in hypertensive patients as compared to normotensive patients (15-17).

Cerebral atherosclerosis with atheroma formation is the basic underlying pathophysiologic mechanism in ischemic stroke; hypertension is one major risk factor for atherosclerosis. The mechanisms of atherosclerosis in hypertensive patients are thought to be due to injury responses i.e. classical wound contracture mechanisms and vascular re-modeling (18).

The atherosclerotic vessel is more prone to thrombosis and rupture. The importance of hypertension as a risk factor in stroke is well established (19, 20). Hypertension was found in 58% of all cases in our study which is nearly similar to that reported by Fayyaz et al (58%) (21), and Al Rajeh et al (56.4%)(22) and higher than that observed by Raza and Imran (49%)(23), Vohra et al (50%)(24).

In this study male to female ratio of stroke is 2.54:1, which is higher than that observed by Raza and Imran (1.6:1)(23). Higher ratio in male patients is due presence of other risk factor like diabetes and smoking and most of patients belong to older age group (25). Peak prone age in this study for

males is 65-71 and for females is 51-60 which is similar to the previous study. Cerebral infarction (77.58%) was common amongst the patients with hypertension in this study as compared to cerebral hemorrhage (22.41%), which is more than observed by Raza and Imran (23), 71.5% and 28.5% respectively. Similar trend is also observed in other studies.

In This study, Hypertension increases stroke risk, probably by increasing the extent and severity of atheroma and the prevalence of microvascular disease in the small penetrating arteries within the brain Because the strength of blood pressure / stroke association is so strong and because treatment of hypertension reduces stroke risk, one can conclude that hypertension is a causal risk factor. Furthermore, effective treatment of hypertension will reduce stroke incidence and mortality.

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Table (1): Stroke in hypertension in age group

Age/years	Hypertension		Cerebral infarction		Cerebral hemorrhage	
	Males	Females	Males	Female	Males	Females
20-40	1	0	1	0	0	0
41-50	7	3	6	2	1	1
51-60	11	7	9	5	2	2
61-70	15	3	11	2	4	1
71-80	8	3	6	3	2	0
Total	42	16	33	12	9	4

Table (2): Risk factors of stroke

Risk factors	Number
Hypertension	58
Diabetes mellitus	31
Smoking	26
Cardiovascular diseases	22
Dyslipidemia	10