



Risk factors of stroke patients

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Abstract

Stroke makes considerable contribution to morbidity and mortality and one of the top four causes of death worldwide. The study was conducted at the department of neurological at Ibn-Sina Teaching hospital in Mosul City, It receive cases either directly from their consultation unit or referral cases from primary care unit (PHCS) which distributed throughout Mosul city. The mean age of presentation of patients with stroke was range 53-75 years with mean and standard deviation of 63.66 and 6.77 years respectively. The mean age of male patients with stroke was 63.17 ± 6.02 years, while it was 63.73 ± 7.28 years in female patients and the difference was statistically not significant. The mean age of patients with ischemic stroke was 64.58 ± 7.05 while those with hemorrhagic were around 5 years younger than them.

Keywords: hemorrhage, years, significant

Introduction

Stroke makes considerable contribution to morbidity and mortality and one of the top four causes of death worldwide [1]. The intracranial hemorrhage and ischemic infarction are the main causes of cerebrovascular accidents. there are several reason and risk factors influencing the risk of developing stroke Advance age is one of the most significant risk factor, 95% of stroke occur in people age 45 and older, and two third of stroke occur in those over age 65 years, also person's risk of dying if he or she does have a stroke also increase increases with age [2]. High blood pressure account for 35-50% of stroke risk, lowering blood pressure has been conclusively shown to prevent both ischemic and hemorrhagic infarction [3]. Diabetes mellitus increase the risk of stroke by 2 to 3 times. While intensive control of blood sugar has been shown to reduce micro vascular complication such as nephropathy and retinopathy it has not been shown to reduce macro vascular complication such as stroke [4]

Material and Methods

Study setting

The study was conducted at the department of neurological at Ibn-Sina Teaching hospital in Mosul City, It receive cases either directly from their consultation unit or referral cases from primary care unit (PHCS) which distributed throughout Mosul city.

Study design

Case control study was adopted in order to achieve the aim and objective of present study as well as to evaluate the risk factors of stroke.

Study period

It has been planned to collect data during six months period from first of October 2013 to the 1st of April 2014.

Study sample

The present study included 100 patients diagnosed to have CVA, and 100 control subject in the same age group, in whom evaluation proved not to have CVA (history of DM and/HT).

Case definition

We studied 100 consecutive patients with stroke admitted to Ibn-Sina hospital during the period study were diagnosed by specialist neurologist classified as suffering one of stroke subtype (cerebral infarction, intra cerebral hemorrhage).

Exclusion criteria

The patients with cerebral infarction was secondary to cerebral tumor, trauma or previous coagulation disorder were excluded from the study.

Control definition

Patients that admitted to department of surgery in Ibn-Sina hospital and diagnosed not to have C V A and admitted to the reason other than CVA will be included in this study as a control.

Data collection tool

A questionnaire form was specially prepared in order to collect all the relevant information related to the study sample.

Statistical analysis

All the data has been analyzed by use of statistical package ver.18(Chicago Inc, 111). The sample of study classified into two groups (stroke and healthy control groups). and stroke group was further sub-classified into (ischemic and hemorrhagic groups).

A 2*2 table were constructed between group of the study and dichotomous data to calculated the Odd ratio, 95% CL (interval estimate of Odd ratio), the significance of these table were assessed by used of Chi square (X^2) test.

P value ≤ 0.05 was considered significant [5].

Result

1.Age at presentation

The mean age of presentation of patients with stroke was range 53-75 years with mean and standard deviation of 63.66 and 6.77 years respectively. The mean age of male patients with stroke was 63.17 ± 6.02 years, while it was $63.73 \pm$

7.28years in female patients and the difference was statistically not significant. The mean age of patients with ischemic stroke was 64.58± 7.05 while those with hemorrhagic were around 5 years younger than them.

Table 1: Age and gender distribution of the studied sample

Group	Male N=144 Mean (SD)	Female N=52 Mean (SD)	Total N=196 Mean (SD)
Stroke	63.71(6.02)	63.73(53.08)	63.66(6.77)
Ischemic	64.44(6.07)	63.09(7.71)	64.58(7.05)
Hemorrhagic	62.36(5.80)	63.00(6.81)	59.75(3.53)
Control	64.69(6.05)	62.00(7.71)	63.26(5.72)

1.1 Demographic risk factors of stroke

Table 2 shows the distribution of two demographic characteristic of stroke (gender and residence) among different groups of the study. The results show male to female ratio was highest among ischemic group (3.33:1), then among whole stroke group (3.08:1), and ratio was least among hemorrhagic group (2.33:1). Regarding the inhabitant patients also shows around 1.5 times preponderance of rural inhabitant among stroke and hemorrhagic groups, while no difference were seen among hemorrhagic group.

Table 2: Distribution of demographic risk factors in the studied sample

Demographic variables	Stroke	Control	Odd ratio	95%CI	P value
Gender					
Male	74(75.5%)	70(71.4%)	1.23	0.502-3.030	0.41
Female	24(24.4%)	28(28.5%)			
Residence					
Urban	40(40.81%)	38(38.77%)	1.08	0.485-2.446	0.50
rural	58(59.1%)	60(61.2%)			
Demographic variable	Ischemic	hemorrhagic	95%CI	95%CI	P value
Gender					
Male	60(61.2%)	14(14.2%)	1.42	0.30-6.69	0.4
female	18(18.3%)	6(6.1%)			
Residence					
Urban	30(30.6%)	10(10.2%)	0.62	0.15-2.52	0.4
Rural	48(48.9%)	10(10.2%)			

1.2 Medical histories as risk factor of stroke

Table 3 shows that the presence hypertension raises the risk for stroke 4 times among patients group. The presence of diabetes raises the risk of stroke two times in comparison to absence of history of diabetes. The examination of odd ratio in between subgroup of stroke reveals two times raise risk in ischemic stroke subgroup if they have diabetes or using a medication for hypertension but the difference was statistically was not significant.

Table 3: Comparison of medical history in between groups and sub groups of the studies sample.

Medical history	Stroke	Control	Odd	95%CI	P value
Hypertension					
Present	60(61.2%)	28(28.5%)	3.947	1.695-9.191	0.001
absent	38(38.77%)	70(71.4%)			
Diabetes					
Present	42(42.8%)	26(26.5%)	2.077	0.888-4.859	0.05
absent	56(57.1%)	72(73.4%)			
Treatment of hypertension					
Present	32(32.65%)	14(14.2%)	2.909	1.072-7.895	0.02
absent	66(67.3%)	84(79.5%)			
Treatment of diabetes					
Present	8(38.77%)	20(20.4%)	2.470	1.033-6.085	0.03
absent	60(61.22%)	78(78.5%)			
Medical history	Ischemic	Hemorrhagic	Odd	95%CI	P value
Hypertension					
Present	44(44.8%)	16(16.32%)	0.32	0.06-1.72	0.1
absent	34(34.6%)	4(4.08%)			
Diabetes					
Present	36(36.7%)	6(6.12%)	2.00	0.45-8.89	0.09
absent	42(42.85%)	14(14.28%)			
Treatment of hypertension					
Present	28(28.57%)	4(4.08%)	2.24	0.41-12.04	
absent	50(51.012%)	16(16.32%)			
Treatment of diabetes					
Present	32(32.6%)	6(6.12%)	1.62	0.36-7.24	0.2
absent	46(46.93%)	14(14.28%)			

1.3 History of smoking as risk factors for stroke

Table 4 Shows the comparison of smoking history in between stroke and control groups. The result reveal that around one third of the samples were smoker in both groups. Further sub

classification of the stroke into ischemic and hemorrhagic group shows that most of smoker suffered from ischemic stroke and raise the four times.

Table 4: comparison of smoking history in between groups and subgroups of the studied sample

History of smoking	stroke	control	Odd ratio	95%CI	P Value
present	26(26.5%)	30(30.6%)	0.819	0.340-1.970	0.41
absent	72(73.4%)	68(69.3%)			
History of smoking	Ischemic	Hemorrhagic	Odd ratio	95%CI	P Value
present	24(24.4%)	2(2.04%)	4.00	0.45-35.20	0.06
absent	54(55.1%)	18(18.36%)			

1.4 body mass index, blood pressure and fasting blood sugar effect on stroke

Shows the comparison of BMI, BP, FBS in between stroke and control groups. The result reveal the SBP, DBP and FBS were significantly higher in stroke group where weight and BMI were significantly higher among control group. Further classification of stroke into ischemic and hemorrhagic group shows that only DBP was significantly in hemorrhagic group.

Table 4: Comparison of BMI, Bp and FBS in between groups and subgroup of the studies sample.

variables	Stroke Mean (SD)	Control Mean (SD)	P Value
Height	170.20(7.67)	170.47(7.63)	0.8
Weight	77.69(9.56)	82.79(9.02)	0.006
BMI	26.96(4.18)	28.51(2.90)	0.03
SBP	156.77(12.52)	141.73(15.73)	0.001
DBP	87.16(17.14)	84.06(11.74)	0.1
FBS	7.54(2.57)	5.20(1.34)	0.001
variables	Ischemic Mean (SD)	Hemorrhagic Mean (SD)	P value
Height	170.23(7.74)	170.10(7.82)	0.9
Weight	77.53(9.28)	78.30(11.08)	0.8
BMI	26.89(4.02)	27.24(4.96)	0.8
SBP	155.38(12.99)	159.50(13.00)	0.3
DBP	86.15(6.33)	92.10(10.52)	0.02
FBS	7.79(2.69)	6.54(1.75)	0.1

Discussion

The present study show male to female ratio was highest among ischemic group (3.33:1) then among whole stroke group (3.08:1) and ratio was least among hemorrhagic group (2.33:1), regarding the inhabitant of patients also shows around 1.5 times preponderance of rural inhabitant among stroke and hemorrhagic group. While no difference were seen among hemorrhagic group. Another case control study found that male to female ratio was highest among male patient (2.5:1) and ratio was more among patients in rural area (2:1) and no significant difference in compared to control^[6]. Also, a case control study in Iran on 550 sample found that male female ratio was (3:1) in compared to control (1.5:1.2)^[7]. The present study shows the presence of hypertension raise the risk for stroke 4 times among patients' group. The use of antihypertensive medication reduces the risk to around 3. The presence of diabetes raises the risk of stroke two times in comparison to absence history of diabetes. The examination of odd ratio in between subgroup of stroke reveal two time raise risk in ischemic stroke subgroup if they have diabetes or using a medication for a medication for hypertension but the difference was statistically not significant. Another study in Tehran found a great association between elevated blood pressure presence of diabetes and increase the risk of stroke in comparison with control^[8]. Research at Finland had close result to the present study, it found that hypertension was

raise 3 time among patient group and diabetes was 2.5 times more among patients group^[9]. Study in Finland found that history of blood pressure and diabetes is associated with stroke attack and medication against them decrease the occurrence of stroke^[10]. The present study reveal that around one third of the samples were smoker in both groups. Further sub-classification of the stroke into ischemic and hemorrhagic group shows that most of smoker suffered from ischemic stroke and raise the risk four times. A study in Finland show that history of smoking are three time in patient group when compared with control^[9]. Also, a case control study in. A study on 200 case in Iran at 2010 found a great association between history of smoking an stroke attack, the ratio was 2:1 when compared to control group^[8]. another researcher at the Centers for Disease Control and prevention looked at medical data to estimate people's risk of developing heart disease over the next 5 years, including smoking habits and the result was stroke increase by 3-fold with history of smoking^[11]. The results reveal that SBP, and FBS were significantly higher in stroke group where weight and BMI were significantly higher among control group. Further classification of stroke into ischemic and hemorrhagic group sows that only DBP was significantly higher in hemorrhagic stroke group. A study in Iran found the SBP and the DBP are 3 time elevated in patient group with high BMI a, also the study reveal the presence of DM are 4 fold more among patient group than control^[7].

Conclusions

Management of medical diseases such as hypertension and diabetes mellitus in addition to life style modification like stop smoking and increase physical activity all these factors play important role in decease incidence of stroke.

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