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Stroke Subtypes in Southern Iran

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Abstract

Background: It was aimed to investigate the prevalence of different subtypes of stroke in South of Iran.**Materials and Methods:** This is a retrospective, single-center study conducted at Namazi Hospital, Shiraz, south of Iran. Age, sex, length of hospitalization and mortality of stroke patients were recorded by reviewing hospital medical records. **Results:** 16351 patients (53.6% male and 46.4%female) were recruited. Ischemic stroke (10750 patients, 65.7%), intracerebral hemorrhage (3282 patients, 20.1%) and subarachnoid hemorrhage (1057 patients, 6.5%) were the most common subtypes of stroke, respectively. In 1262 patients (7.7%), stroke subtype could not been specified. Ischemic stroke and intracerebral hemorrhage were more common in men but subarachnoid hemorrhage was more common in women. Subarachnoid hemorrhage occurred significantly in younger patients. Mortality was significantly higher in intracerebral hemorrhage. Hospital stay was significantly longer in subarachnoid hemorrhage group.
Conclusion: Distribution of different subtypes of stroke in southern Iran is similar to Caucasians.
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Keywords: Stroke; Ischemic; Hemorrhagic; Subarachnoid Hemorrhage; Subtype

Introduction

Recent studies have shown that prevalence and incidence of stroke in Iran is significantly higher than western countries; moreover, stroke occurs more at younger ages[1]. Iran is comprised of different ethnic groups. Mitochondrial DNA linage analysis showed main mtDNA lineage to be West Eurasian but East Eurasians, South Asians and African lineage were also seen[2]. Although there are some published data on prevalence of different types of stroke in central and northern Iran, information about stroke epidemiology in Southern Iran is scarce[1,3]. This information can be helpful for health policymakers to improve prevention and treatment of stroke in Iran.

Methods and Materials

This retrospective, single-center study was conducted at Namazi Hospital, affiliated to Shiraz University of Medical Sciences in Shiraz between March 2001 and September 2011.

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Data was obtained by reviewing hospital medical records. Diagnosis of stroke and its subtypes was made upon clinical findings with neuro-imaging studies, and was confirmed by an experienced neurologist. Patients who had neurologic deficits after epilepsy, brain tumors, trauma or deficits due to metabolic causes, or incomplete records were excluded. Age, sex, length of hospitalization and mortality were recorded for each patient in an especially-designed data matrix. [4]This study was conducted and approved by the Ethics Committee of Shiraz University of Medical Sciences (no.# HP29-90). All data are reported as proportions or the mean ± SD for 95% confidence intervals. One-way ANOVA was applied to compare mean length of hospital stay between different subtypes of stroke. Chi-square test was used to compare sex and mortality with different subtypes of stroke. A P value less than 0.05 was considered statistically significant.

Results

Medical records for a total of 16 351 patients were reviewed; 8759 (53.6%) were males and 7592 (46.4%) were females. 10750 (65.7%) were diagnosed as having ischaemic stroke (IS), 3282 (20.1%) diagnosed as having intracerebral hemorrhage (ICH), 1057 (6.5%) diagnosed as having subarachnoid hemorrhage(SAH) and 1262(7.7%) diagnosed as having unspecified subtype of stroke. Table-1 revealed demographic characteristics of the patients with different subtypes of stroke. IS and ICH were more common in men but SAH was more common in women. SAH occurred significantly in younger patients. Mortality was significantly higher in ICH. Hospital stay was significantly longer in SAH group.

Discussion

In current study, prevalence of ischemic subtype of stroke was significantly higher than hemorrhagic and subarachnoid groups. Frequency of subtypes of stroke in different ethnic and economic areas is different. IS varies between 54 and 90%, ICH varies between 6-27% and SAH varies between 1-10% of all-stroke patients in population studies held in both low to middle- and high-income countries[5]. Distribution of hemorrhagic and ischemic subtypes of stroke in Iran is similar to Caucasians rather than Asians and Pacific Icelanders [6].

Low prevalence of SAH in our study may be due to not performing complete paraclinic diagnostic tests such as lumbar puncture in CT-negative patients with appropriate history, however in our center, LP is almost always performed in this situation [1].

In contrast to other stroke subtypes including IS and ICH, SAH has a different epidemiological pattern affecting relatively younger indi-

Table 1. Mean age, sex, mortality and mean hospital stay in different subtypes of stroke in Shiraz, south of Iran

		Ischemic	Hemorrhagic	Subarchnoid Hemorrhage	Unspecified Group	Total	P value
Age Mean (95% CI)		66.3 (66.0 to 66.5)	59.0 (58.3 to 59.7)	50.8 (49.7 to 51.8)	60.3 (59.2 to 61.4)	63.4 (63.1 to 63.6)	<0.001
Sex	**Male**	5665 (52.7%)	1879(57.3%)	504(47.7%)	711(56.6%)	8759 (53.6%)	<0.001
	Female	5085 (47.3%)	1403(42.7%)	553(52.3%)	551(43.4%)	7592 (46.4%)	
Mortality	**No**	9022 (83.9%)	2136(65.1%)	750(71.0%)	1089(86.3%)	12997 (79.5%)	<0.001
	Yes	1728 (16.1%)	1146(34.9%)	307(29.0%)	173(13.7%)	3354 (20.5%)	
Mean Length of hospital stay (95% CI)		5.5 (5.4 to 5.6)	7.3 (7.0 to 7.6)	11.0 (10.5 to 11.6)	7.1 (6.64 to 7.50)	6.3 (6.2 to 6.4)	<0.001

viduals. In this age pattern, it can be said that rupture of a congenital aneurysm or arteriovenous malformation of intracranial vessels, are pathological mechanisms unrelated to normal aging [7]. Known complications of SAH such as rebleeding and arterial vasospasm that occur mostly within the first two weeks may be the main cause of longer hospital stay among patients with SAH than SI and ICH. These finding are similar to those in developed countries [7,8].

Female to male ratio in different subtypes of stroke in our population was also similar to other countries [6,9]. Higher mortality of intracranial hemorrhagic in comparison to ischemic stroke was also seen in different ethnicities [10,11]. Health authorities should initiate prompt preventive programs to address this high incidence of stroke, particularly in young population, who are still in working age. There are several limitations in our study. To explain the sources of missing cases, we could state that Emergency Departments of our hospital are too busy to perform a complete evaluation of each patient before discharging. Another explanation of missing cases may be related to the patients who can't even afford public hospital charges. Another limitation is that our research is hospital-based study.

Conclusion

Based on the findings of this research, the distribution of different subtypes of stroke in southern Iran is similar to Caucasians. To provide more accurate data on the epidemiology of stroke in southern Iran, population-based studies are highly recommended.

Conflicts of Interest

Authors declare that they have no conflicts of interest.

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