International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 2 Number 8 (August-2014) pp. 252-257

www.ijcrar.com

A Study of prevalence of different types of stroke in Tabriz since 2001-5

Masoud Nikanfar, Dariush Savadi Oskouei*, Farzad Mahshad, Sheida Shaafi

Neuroscience research center (NSRC), Department of Neurology, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

***Corresponding author**

KEYWORDS

Stroke,
Ischemic Stroke,
ICH
and
SAH Season differences

A B S T R A C T

Cerebrovascular accident as the commonest neurologic disorders comprises a significant percent of hospitalized patients. In order to better management and planning about these patients it's necessary to do quite a lot of research work on it. The aim of this study is to assess the relationship between different types of strokes with different seasons and months of year.In a cross-sectional descriptive-analytic study, which was performed in neurology department of Tabriz University of Medical Sciences, patients with CVA were studied for five years. One consisted of stroke patients admitted to hospitals who were resident of Tabriz province. In this study, classified stroke as three subtypes: Ischemic Stroke, ICH and SAH. The study results showed that isn't significant correlation between different types of stroke and season of the year in this region; hence there was significant difference between different months of the year and different types of strokes. So what most of the strokes occurred in April and October, respectively and the least occurrence was in September. In this study, we found significant difference between different types of stroke and age of patients. The mean age for Ischemic Stroke, ICH and SAH were 67.15, 66.1 and 55.01, respectively. We found that Ischemic Stroke and ICH were more prevalent in women compared to men but SAH had more prevalent in men. Occurrence different types of stroke had no correlation with season of the year in this region of the country. But there is some correlation between different months of the year with most prevalence in April and October and least prevalence in September.

Introduction

Cerebrovascular diseases (CVA) are regarded as debilitating diseases in the field of Neurology which many people are griped by that each year. This high prevalence and disabilities following these diseases not only bring many problems for individuals, but also creates concern for health system of community. So, it is necessary to study about this disease and carry out comprehensive research from all aspects (1-2).

In one study (1993-2012) which was performed in Finland on the prevalence and mortality following cerebral vascular events, they expressed that the incidence of stroke has the maximum amount in the winter and the lowest amount in the summer and this template is existed in ischemic CVA and ICH and this pattern has not been observed in the case of SAH. Mortality rate is also the greatest in the summer and it was suggested that risk of incidence of ischemic CVA in the winter is 13% and 14% in men and women, respectively and these amounts were more than the other seasons. This applies also in the case of bleeding inside the brain (3).

In terms of basic physiology it has been determined that the cold exposure cause peripheral vasoconstriction and increased blood pressure. Additionally, cholesterol and triglycerides are more willing to increase in winter and most importantly, the concentration of plasma Fibrinogen and blood viscosity – especially the elderly – justifies the seasonal difference in cerebral vascular events.

Other factors have been proposed for the seasonal differences including air pollution, the Sun's rays, the flu outbreak and diet, although the difference in temperature is the most important factor in the different seasons of the year.

In a three-year study that was carried out in Australia's Hunter, the highest prevalence was reported in the in the winter and the lowest prevalence was in the summer(4).

In Auckland (New Zealand), a one-year review was done indicating that prevalence of stroke is higher in the autumn and winter compared to the spring and summer, respectively. The survey also showed that most of the cerebral strokes in this area have occurred in the late morning(5).

Seven years ' study conducted in Toyamayi in Japan also indicated that the cerebral vascular accidents were more in winter and autumn seasons than the summer; it was also identified that cerebral strokes were occurred in work days more than holidays and this difference was observed in active people under 60 years of age (s). In a study lasting for 10 years in Malmoy, Australian (1989-1999) it was shown that the prevalence of ischemic strokes are more in autumn and winter, while there was no significant difference in cerebral and subarachnoid bleeding (6).

In another research that was done in Japan, the incidence of ischemic was reported in different seasons of the year as 22.9% in spring, 25.3% in winter, 25.8% in fall and 26% in the summer (7).

In a two-year investigation by Berginer et al it was concluded that the incidence of stroke was two times more in hot days than cold ones(8).

Trumbo embolic mechanisms following the heat have been considered as possible cause of these differences and finally it was suggested that it is better to utilize suitable ventilation tools, sufficient liquids and methods to prevent platelets aggregation me (such as aspirin) in the hot days in people prone to stroke.

Materials and Methods

In a cross-sectional descriptive-analytic study, which was performed in neurology department of Tabriz University of Medical Sciences, patients with CVA were studied for five years.

This study was a cross-sectional descriptive-analytic study, which was performed for 5 years (2001-2005) in the Razi and Imam Khomeini hospitals, based on the medical files of all hospitalized patients. In this study, Cerebrovascular accident (CVA) or stroke was defined as a syndrome with acute onset and neurological damage, which lasts at least 24 hours and reflects focal involvement of the central nervous system (CNS). This accident is caused by disruption of blood flow and is divided into three groups: ischemic CVA, intracerebral hemorrhage (ICH), and subarachnoid hemorrhage (SAH). The frequency distribution of patients was also studied based on the season of referral. Patients with incomplete files and information were excluded from the study.

Statistical Analysis

The collected data were analyzed by SPSS-17 statistical software. The collected data were expressed as percentage and mean ± SD. Continuous (quantitative) variables were compared by Independent samples and Paired t test. Categorical (qualitative) variables were compared by contingency tables and Chi-square test or Fisher's exact test. P-value ≤0.05 was considered statistically significant.

Result and Discussion

2996 people from 6174 were male (48.5%) and 3178 patients (51.5) were female. 4862 people (78.75%) were patients with Ischemic Stroke, 1,050 people (17%) with ICH and 262 persons (4.25%) with SAH.

The mean age of patients were 67.15±12.46 year in patients with Ischemic Stroke, 66.1±12.55 in patients with ICH and 55.01±15.35 in patients with SAH. The mean age of patients with SAH was lower than other patients (p <001).

The age distribution of studied patients is shown in graph 1 which is indicative of the high prevalence of this disease in 7th and 8th decades so that 62.45% of cases had been happened in these ages. The number of patients based on referred month is shown in chart 2. The season of visiting patients of this study has been shown in chart 3. The month of referring and age distribution of patients based on disease is shown in the tables 1 and 2.

As mentioned, Cerebrovascular accident (CVA) is the most common neurologic disease that annually leads to hospitalization of many patients and imposes enormous health costs on the society.In this study, which was performed in the Razi and Imam Khomeini hospitals for 5 years (2001-2005), a total of 6175 hospitalized patients diagnosed with CVA were selected. The figure only included patients that resided in Tabriz because these two hospitals are considered to be reference hospitals in this province and thus accept patients from surrounding cities as well. This somehow reflects the high rate of occurrence of CVA in Tabriz.

The sample size was 6174, with 2996 male (48.5%) and 31.78 female (51.5%) patients. CVA was more prevalent among women than men. All CVA cases were divided into the following three groups: CVA, ICH and SAH. A total of 4862 cases (78.8%) were diagnosed with ischemic CVA while 1050 (17%) and 262 (4.2%) cases were diagnosed with ICH and SAH. This indicated the higher prevalence of CVA compared to the other two types. In this study, it was found out that with an increase in age the probability of occurrence of CVA increases significantly. That is to say, during the five years of study, 1746 (28.6%) and 2092 (33.9%) patients experienced CVA in their 70s and 80s, respectively.

Table.I Frequency patients based on month and diagnosis

Month	IS	ICH	SAH	Total
January	392	78	22	492
February	432	76	14	522
March	390	74	16	480
April	528	192	44	764
May	386	76	16	478
June	406	52	22	480
July	394	114	18	526
August	396	76	14	486
September	326	46	20	392
October	460	134	38	632
November	370	58	20	448
December	382	74	18	474

Table.II Age distribution of patients based of diagnosis

Age	IS	ICH	SAH	Total
10-20	8	0	10	18
20-30	36	12	10	58
30-40	122	38	14	174
40-50	380	76	76	532
50-60	700	180	50	930
60-70	1386	314	64	1764
70-80	1724	340	28	2092
80-90	460	84	8	552
>90	46	6	2	54

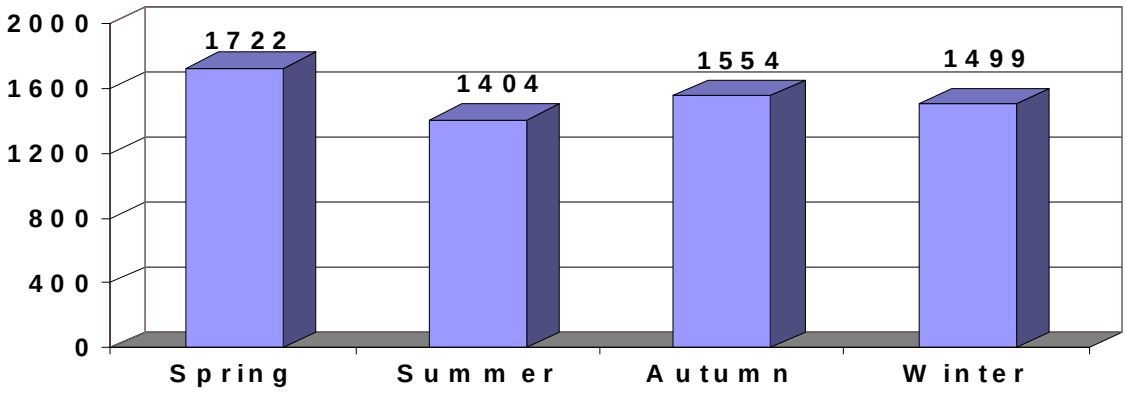

Figure.I Age distribution of patients

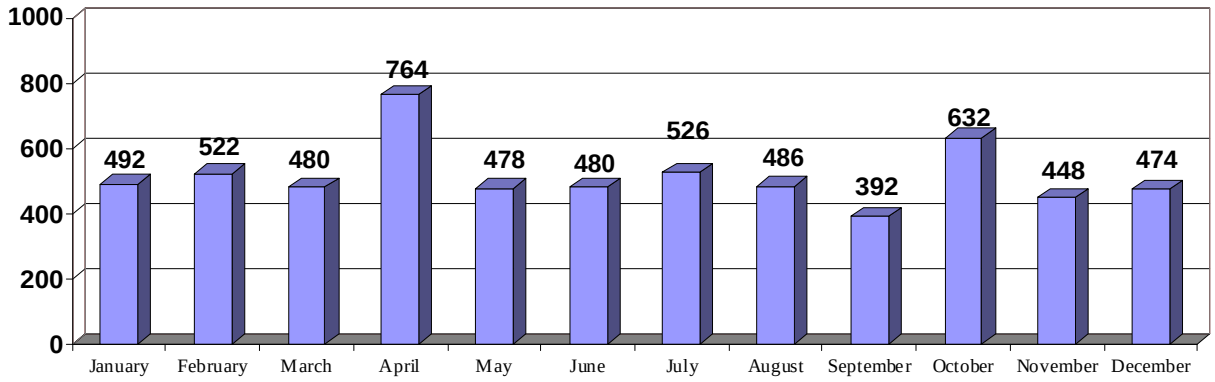

Figure.II Months Distribution of patients

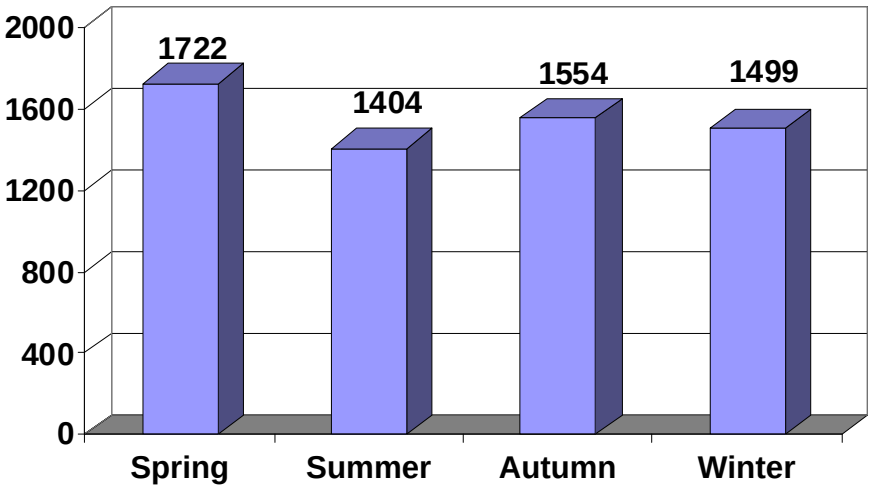

Figure.III Season distribution of patients

From the ninth decade of life onward the rate of CVA decreases significantly due to the reduction in the hope for life in the later ages of life.

According to Diagram (4), which shows the frequency of occurrence of CVA in different months of the year, the highest rates of CVA in April and October were 764 and 632 cases, which accounted for 12.4% and 10.4% of the total CVAs, respectively. The lowest rate of CVA in September was 392 cases, which only accounted for 6.3% of cases. After studying the frequency of CVA in different seasons of the year, almost similar information was obtained. The highest rate of occurrence of CVA was in spring with 1722 cases (27.9%) while the lowest rate belonged to summer with 1404 cases (22.7%). No significant difference was observed between the rate of occurrence of CVA and season of the year (P=0.0358). In addition, the occurrence of CVA in ? (12.4%) was significantly higher than other months of the year (p<0.001).

With an increase in age, the rate of occurrence of CVA increases as well. Therefore, most of the ischemic CVA cases were experiencing it in their 70s and 80s.

This was also the case with intracerebral hemorrhage. However, in the case of subarachnoid hemorrhage, the highest rate of occurrence was in the 50s, 60s and 70s, or a few years before the age of ischemic CVA. This indicated that occurrence of CVA increases drastically with an increase in age ($P<0.001$).

The mean age of ischemic CVA patients and ICH patients was 67.15±12.46 years and 66.1±12.55 years (with standard deviation of 12.557), respectively. Therefore, there was not a significant difference between the ages of the two groups ($P=0.56$) (Table 6). The mean age of SAH patients was 55.01±15.35 years, which was significantly lower than that of the other two groups ($P<0.001$). Hence, the mean age of ischemic CVA patients was higher than intracerebral hemorrhage cases. The mean of the intracerebral hemorrhage cases was about 11 years higher than that of the subarachnoid hemorrhage group.

Gender comparison of patients also indicated that the frequency of CVA and ICH was higher among women than men. On the contrary, SAH was more common among men. Finally, it can be said that in this study, no evidence was obtained to prove the relationship between occurrence of different types of CVA and seasons of the year. Therefore, in spite of the significant difference between the occurrence of CVA and months of the year, it seems that factors other than ambient temperature contributed to the results which do not fall in the scope of this research.

Suggestions

Doing more extensive study at all therapeutic centers of the city.
Study on the cause of more occurrences in specific months during the year

References

1-Adams RD, Victor M.(2009). Principle of neurology. 9 th. Ed, Mc Graw Hill, New York, 821-5.

2. Aminoff MJ, Greenberg DA, Simon RP (2005). Clinical Neurology, 6 th ed, Mc Graw-Hill's, Philadelphia, pp. 286-9.

3-Jakovljević D, Salomaa V, Sivenius J, Tamminen M, Sarti C, Salmi K, Kaarsalo E, Narva V, Immonen-Räihä P, Torppa J, Tuomilehto J. Seasonal variation in the occurrence of stroke in a Finnish adult population. The FINMONICA Stroke Register.Finnish Monitoring Trends and Determinants in Cardiovascular Disease. Stroke. 1996 Oct;27(10):1774-9.

4-Wang Y, Levi CR, Attia JR, D'Este CA, Spratt N, Fisher J. Seasonal variation in stroke in the Hunter Region, Australia: a 5-year hospital-based study, 1995-2000. Stroke. 2003 May;34(5):1144-50.

5- Anderson N, Feigin V, Bennett D, Broad J, Pledger M, Anderson C, Bonita R. Diurnal, weekly, and seasonal variations in stroke occurrence in a population-based study in Auckland, New Zealand. N Z Med J. 2004 Sep 24;117(1202):U1078.

6-Khan FA, Engstrom G, Jerntorp I, Pessah-Rasmussen H, Janzon L. Seasonal patterns of incidence and case fatality of stroke in Malmo, Sweden: the STROMA study. Neuro epidemiology. 2005;24(1-2):26-31.

7-Wang H, Sekine M, Chen X, Kagamimori S. A study of weekly and seasonal variation of stroke onset. Int J Biometeorol. 2002 Dec;47(1):13-20.

8- Berginer VM, Goldsmith J, Batz U, Vardi H, Shapiro Y. Clustering of strokes in association with meteorologic factors in the Negev Desert of Israel: 1981-1983. Stroke. 1989 Jan;20(1):65-9.