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ORIGINAL ARTICLE

A Descriptive Study on the Frequency of Generalized Seizures in Patients Presenting with Acute Stroke

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ABSTRACT

Objective: The objective of this research work was to evaluate the rate of occurrence of generalized seizures among the patients suffering from ischemic stroke of acute nature.

Methodology: This research study was carried out at Neurology Department, Sheikh Zayed Hospital Rahim Yar Khan. We included total one hundred patients who were suffering from acute ischemic stroke. The follow up period for the patients was fifteen days to evaluate the seizures after stroke.

Results: The average age of the patients was 57.37±11.18 years. The rate of occurrence of generalized seizures among these patients of acute ischemic stroke was 10.0%.

Conclusion: The appearance of generalized seizures among these patients was not much high.

Keywords: Seizures, stroke, occurrence, frequency, methodology, neurology, generalized.

INTRODUCTION

The most common reason of high mortality rate worldwide is stroke [1]. Stroke is also the 3rd most common death reason in the developed countries. Strokes are the reason of more than 5.50 million deaths per year [2] and 2/3rd of these deaths are occurring in the countries which are in developing state [3]. Different subtypes of stroke have demonstrated significant variation between various geographical areas as well as various ethnic groups within the similar geographical region. These disparities in the characteristics of stroke have significant influence in the strategies of stroke treatment, diagnosis and prevention. The rate of occurrence of acute ischemic stroke in our country Pakistan is 72.0% [1].

The topic of seizures related with stroke is neglected and it is normally considered as a non-dangerous complication appearing in the long course of CVDs (Cardiovascular Disease) [2]. It is stated that there is occurrence of seizures in 1.80% to 15.0% patients after the onset of stroke and it constitute the majority of seizures after stroke [3]. Chiang in his research study discovered that in case of patients of ischemic stroke, the frequency of seizures was about 9.10% [4]. Bladreported the frequency of 8.60% seizure post-ischemic stroke [5]. The purpose of this research work was to determine the rate of occurrence of generalized seizures among the patients who suffered from acute ischemic stroke. Seizures after the stroke has the ability to deteriorate the patient's condition. Post-stroke seizure's development had very high mortality rate in comparison with the patients without development of the seizures after the stroke. There is contradiction about the frequency of seizures after the stroke in particular literature as some research studies reported very low incidence rate whereas some studies stated very high frequency. However, there is non-availability of the local data from which we can evaluate the rate of occurrence of seizures among the patients who suffered from acute ischemic stroke. So, we carried out this research study to find the frequency of seizures after stoke in our local subjects.

METHODOLOGY

The design of this study was descriptive case-series. This research work was carried out in Neurology Department, Sheikh Zayed Hospital Rahim Yar Khan. The duration of this study was from June 2021November 2021. The calculation of the sample size of 100 patients was carried out with 95.0% CI (Confidence Interval), 4.50% error margin and taking the most expected seizure's percentage i.e. 10% inpatients appearing with the ischemic stroke of acute nature. We used the non-probability sampling technique for the selection of the patients. We defined the inclusion criteria as the patients having age from 16 to 80 years of age from both genders appearing with acute ischemic stroke. We assessed the stroke as theexistence of one or more of the followings,

1. Incapabilityof the patient to move one or both limbs on single side of body
2. Incapability to comprehend the commands and formulation of speech
3. Incapability to view single side of visual field
4. Unresponsiveness of half body with confirmation from MRI (Magnetic Resonance Imaging).

We excluded the patients who were suffering different other neurologic complications as head trauma, stroke and hypoxic encephalopathy by checking their clinical records. We also excluded the patients present with history of epilepsy and the patients taking AEDs regularly for other reasons than epilepsy. Total 100 patients who fulfilled the selection standard, were recruited for this research study. We took the written consent from all the participants of this research study. We also noted the demographic details as age, name, contact numbers and gender. We admitted the patients to the neurologic ward and followed up of these patients was carried out in the same ward. After that patients got discharge and follow up of these patients was carried out in OPD of same hospital. Counseling of these patients was carried out about seizures and to state the development of seizures and they were advised to revisit the OPD after fifteen days. In the duration of follow up period, we noted down the detail if there was occurrence of

seizures. We noted down all the information on a well-organized Performa.

SPSS V.20 was used for the entry and statistical analysis of the collected information. The calculation of mean and standard deviations (SD) was carried out for the quantitative variables as duration of symptoms and age. We gave the percentage and frequency for different qualitative variables as HTN, DM, seizures and gender. The stratification of the data was carried out for age of the patients, symptom's duration, gender, HTN and DM. We applied the Chi-square test for the comparison of the stratified groups. We considered the P-value≤0.050 as significant.

RESULTS

In this current research study, we included one hundred patients who were suffering from acute ischemic stroke. 57.37±11.18 years was the mean age of the patients of this research work. Majority of the patients was having more than fifty years of age. Out of total 100 patients, 55 (55%) patients were male and 45 (45%) patients were females. Total 80.0% (n: 80) patients were present with hypertension whereas 35% (n: 35)patients were present with diabetic mellitus. The average symptoms duration was 2.0±1.66days and the duration of stay in the hospital was 3.03±2.19 days. All mentioned detail is available in Table-1.

Table 1: Baseline Characteristics of Patients (n=100)

Age (Years)	57.37±11.18
≤40years	11 (11%)
41-50years	14 (14%)
51-60years	31 (31%)
61-70years	48 (48%)
Male	55 (55%)
Female	45 (45%)
Hypertension	80 (80%)
Diabetes	35 (35%)
Duration of symptoms (days)	2±1.66
Length of stay (days)	3.03±2.19

Table 2: Risk Stratification of Generalized Seizures in Patients with Acute Ischemic Stroke.

	Generalized Seizures		p-value
	Yes	No	
	n=10	n=90	
Age (Years)			
≤40	0(0%)	11 (100%)	0.361
41 to 50	2(14.28%)	12(85.72%)	
51 to 60	3(9.67%)	28 (90.32%)	
61 to 70	5(10.4%)	49(89.6%)	
Gender			
Male	0(0%)	55(100%)	0.0005
Female	7(15.55%)	38 (84.45%)	
Hypertension			
Yes	8(80%)	72(80%)	>0.999
No	2(20%)	18(20%)	
Diabetes			
Yes	4(40%)	32(35.55%)	0.74
No	6(60%)	58(64.45%)	
Duration of symptoms			
1-2	8(80%)	85(94.5%)	0.036
>3	2(20%)	5(5.5%)	

There was no patient with the appearance of generalized seizures in the age group of ≤40.0 years but in the patientshaving more than 40 years of age, the was high rate of occurrence among middle-aged patients.

The rate of occurrence of generalizedseizures was much low among male patients as compared to female patients. There was no effect of HTN (Hypertension) and DM (Diabetes Mellitus) on seizure's development. When the duration of the symptoms was more than three days, there were high chances of generalized seizures after acute ischemic stroke as presented in Table-2.

DISCUSSION

Stroke as well as seizures are the most common and serious neurological complications in the whole world. Moreover, one of the most important reason of the onset of seizures in elder patients is stroke, responsible for over 35.0% of new onset symptomatic epilepsy happening over the age of sixty years [6, 7]. Different research studies conducted in past have described the post-stroke seizures [8]. There can be occurrence of post-stroke seizures after the ischemia onset or there can be delay in its occurrence after ischemic stroke [9]. In this research work, there were total one hundred patients from 16 to 80 years of age from both genders suffering from acute ischemic stroke. Majority of the patients was having the age of above fifty years. Mean age of these patients was 57.37±11.18 years which is consistent with the findings of a study which stated the increased occurrence in elderly patients having post-stroke seizures [10]. Dhenukahave stated a younger age with average age of 45.41 years at first seizure after the occurrence of stroke but he recruited a wide spectrum of patients in his study [11].In this research study, out of 100 patients, 55% were males and 45% were females showing more frequency of male patients in comparison to female patients as elaborated in many international as well as local reports conducted in past [12, 13].

Bhojo has stated the same rate of occurrence of post-stroke seizures when considering the gender [14]. The occurrence of seizures after stroke has been discovered to have relation with the type of stroke. According to most research studies, the most provoking agent for seizures is after the appearance of hemorrhagic strokes [10, 14-16]. Lancmandiscovered that among the patients who had seizures after the occurrence of stroke, 25.0% patients had hemorrhagic stroke as compared to 7.0% who had ischemic stroke [17]. Many other research studies supported these results. Kilpatrick discovered an occurrence rate of 15.40% for the patients having hemorrhagic strokes and 6.50% among the patients having ischemic strokes. The second most stated seizure type was generalized seizures after the stroke [18, 19, and 20].

Some other research studies have discovered the GTCSs as the most common type of seizure [20]. We found the rate of occurrence of generalized seizures as 10% among patients appear with acute ischemic stroke. Same findings were discovered by Bhojokhealaniwho discovered in his research study that during the period of three years, total 1548 patients got the admission in the hospital due to stroke. Total 28.0% patients were present with intracerebral hemorrhage and 72.0% patients were present with ischemic stroke. The rate of occurrence of generalized

seizures was nine percent after acute ischemic strokes [14]. Kilpatrick found in his research study discovered that 3.70% of transient ischemic attack had the occurrence of generalized seizures [16].

There are some limitations of this research work as less amount of the patients present with post-stroke seizures and less data about the anti-epileptic treatment to the participants as well as its outcome. There is need of other research works on large sample size for the improvement of proper comprehension of post-stroke seizures.

CONCLUSION

Total 10.0% (10 out of 100) patients were present with generalized seizures who appeared with acute ischemic stroke. The frequency of generalized seizures was high in females as compared to the male patients and in the patients having age of 61 to 70 years. The presence of the seizures among the patients suffering from acute ischemic stroke will disturb the QoL (Quality of Life) of these patients.The infrequent seizures may cause increased psychological and physical disability, social restrictions and dependency. There are recommendations for further research studies involving multi-centers with special emphasis on timing of starting anticonvulsant treatment and total treatment duration. For the optimal management of such critical issues, there is requirement of data about the impacts of different strategies for its proper administration, data regarding specific age, QoL related with specific health and health utility index related with the seizures after acute stroke.

REFERENCES

1. Syed N, Khealani B, Ali S, Hasan A, Brohi H, Mozaffar T, et al. Ischemic stroke subtypes in Pakistan: the Aga Khan university stroke data bank. J Pak Med Assoc 2003;53(12):584.
2. De Reuck J. Management of stroke-related seizures. Acta Neurol Belg 2009;109(4):271-6.
3. Varelas PN, Hacein-Bey L. Stroke and critical care seizures. Seizures in Critical Care: Springer; 2010. p. 49-118.
4. Chiang I-H, Chang W-N, Lin W-C, Chuang Y-C, Chang K-C, Tsai N-W, et al. Risk factors for seizures after first-time ischemic stroke by magnetic resonance imaging. Acta Neurol Taiwan 2010;19(1):26-32.
5. Bladin CF, Alexandrov AV, Bellavance A, Bornstein N, Chambers B, Coté R, et al. Seizures after stroke: a prospective multicenter study. Arch Neurol 2000;57(11):1617-22.
6. Asconape J, Penry J. Poststroke seizures in the elderly. Clinics in geriatric medicine 1991;7(3):483-92.
7. Ramsay RE, Rowan AJ, Pryor FM. Special considerations in treating the elderly patient with epilepsy. Neurology 2004;62(5 suppl 2):S24-S9.
8. Kelly KM. Poststroke seizures and epilepsy: clinical studies and animal models. Epilepsy currents 2002;2(6):173-7.
9. Camilo O, Goldstein LB. Seizures and epilepsy after ischemic stroke. Stroke 2004;35(7):1769-75.
10. Lamy C, Domigo V, Semah F, Arquizan C, Trystram D, Coste J, et al. Early and late seizures after cryptogenic ischemic stroke in young adults. Neurology 2003;60(3):400-4.
11. Dhanuka A, Misra U, Kalita J. Seizures after stroke: a prospective clinical study. 2001.
12. Sander JW. The epidemiology of epilepsy revisited. Current opinion in neurology 2003;16(2):165-70.
13. Mohr J, Caplan LR, Melski JW, Goldstein RJ, Duncan GW, Kistler J, et al. The Harvard cooperative stroke registry a prospective registry. Neurology 1978;28(8):754-.
14. Khealani BA, Ali S, Baig SM. Post stroke seizures: descriptive study from a tertiary care centre in Pakistan. Journal of the Pakistan Medical Association 2008;58(7):365.
15. Arboix A, García-Eroles L, Massons JB, Oliveres M, Comes E. Predictive factors of early seizures after acute cerebrovascular disease. Stroke 1997;28(8):1590-4.
16. Kilpatrick CJ, Davis SM, Tress BM, Rossiter SC, Hopper JL, Vandendriesen ML. Epileptic seizures in acute stroke. Arch Neurol 1990;47(2):157-60.
17. Lansberg MG, O'donnell MJ, Khatri P, Lang ES, Nguyen-Huynh MN, Schwartz NE, et al. Antithrombotic and thrombolytic therapy for ischemic stroke: antithrombotic therapy and prevention of thrombosis: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141(2):e601S-e36S.
18. Alvarez-Sabin J, Montaner J, Padro L, Molina C, Rovira R, Codina A, et al. Gabapentin in late-onset poststroke seizures. Neurology 2002;59(12):1991-3.
19. Hornig CR, Büttner T, Hufnagel A, Schröder-Rosenstock K, Dorndorf W. Epileptic seizures following ischaemic cerebral infarction. European archives of psychiatry and neurological sciences 1990;239(6):379-83.
20. Passero S, Rocchi R, Rossi S, Ulivelli M, Vatti G. Seizures after spontaneous supratentorial intracerebral hemorrhage. Epilepsia 2002;43(10):1175-80.