PREDICTORS OF POST STROKE DEPRESSION AMONG STROKE SURVIVORS.

DR. MUHAMMAD HAMZA KHAN.

MBBS

NISHTAR HOSPITAL, MULTAN, PAKISTAN.

DR. TAYYABA KHALID

MBBS

NISHTAR HOSPITAL, MULTAN, PAKISTAN.

DR. HUZAIFA NAZIR SIDDIQUI.

MBBS

NISHTAR HOSPITAL, MULTAN, PAKISTAN.

ABSTRACT;

Background; Post stroke depression is an important factor limiting recovery and rehabilitation in acute stroke patients. This study was done to ascertain frequency of depression and role of different underlying factors among patients with ischemic stroke in our local population of Southern Punjab. **Material and methods;** All the cases of ischemic stroke (96), fulfilling inclusion criteria were recruited from outdoor of Department of medicine, Nishtar Hospital Multan and patients were assessed for depression using hospital anxiety and depression scale. The patients were categorized having depression the basis of hospital anxiety and depression scale (HADS) scoring. Data was entered and analyzed by SPSS-18. **Results;** Of these 96 study cases, 50 (52.1 %) were male patients while 46 (47.9 %) were female patients. Mean age of our study cases was 49.17 ± 9.10 years. Of these 96 study cases, 45 (46.9 %) were from rural area while 51 (53.1 %) from urban areas, 29 (30.2 %) were diabetic and 58 (60.4 %) were hypertensive. Mean body mass index (BMI) of our study cases was 24.12 ± 2.88 kg/m^2 and obesity was present in 17 (17.7 %). History of smoking was present in 21 (21.9 %). Mean disease duration of our study cases was 8.36 ± 4.31 months and 50 (52.1 %) had disease duration more than 6 months while 67 (69.8%) had monthly family income up to Rs. 25000 and history of alcohol consumption was zero. Previous history of stroke was present in 16 (16.7 %) while family history of stroke was noted in 17 (17.7 %) of our study cases and 67 (69.8 %) were illiterate and 29 (30.2 %) were literate. Depression was noted in 63 (65.6%) of our study cases. **Conclusion;** Very high frequency of depression was observed in our study among patients having ischemic stroke. Depression was significantly associated with gender, residential status, smoking, hypertension, educational level, smoking, prolonged duration of illness and occupation. Clinicians treating patients should anticipate depression and diagnose them to treat them in early stages.

Keywords; Depression, Ischemic stroke, Frequency.

INTRODUCTION;

Stroke is a global health problem which is leading cause of adult disability and the second leading cause of mortality worldwide [1]. According to World Health Organization (WHO) estimates for the year 2020, stroke will remain the 2nd leading cause of death along with ischemic heart disease both in developing and developed countries [2]. In addition, stroke patients in underdeveloped countries are 10 years younger than their western counterparts and

hence the burden of sustained disability in survivors is greater.[3] Ischemic Stroke occurs as a result of an obstruction within a blood vessel supplying blood to the brain. It accounts for 60-90% percent of all stroke cases in Pakistan. The risk factors for stroke are classified as non-modifiable (age, family history, prior stroke, gender and ethnicity) and modifiable risk factors (hypertension, diabetes mellitus, coronary artery disease, arterial fibrillation, dyslipidemia, smoking, obesity, alcohol abuse and physical inactivity [4-6]. Stroke is frequently associated with psychiatric symptoms such as depressed mood, anxiety and apathy. The psychiatric complications of stroke, although recognized for more than one century, have never received the attention that has been devoted to other stroke complications, such as motor impairment, language problems, or cognitive deficits. Inadequate attention is to these psychiatric symptoms results in poor quality of life and may hinder rehabilitation. Among depressed mood, anxiety and apathy, post stroke depression (PSD) is a common complication of stroke that negatively interferes with outcome of stroke patients [7]. Patients with PSD has more functional disability, poorer rehabilitation outcomes, reduced quality of life and increased mortality. According to previous published data, mainly from developed countries, PSD has a high prevalence among stroke patients, ranging from 20 to 50%. The report also indicate that depression persists 3–6 months after stroke. [8] The clinical symptoms of PSD mainly include depressed mood, weight loss or gain, sleep changes, fatigue, worthlessness, and anhedonia, with the first two symptoms as the core symptoms. PSD might be associated with the impairment of other neurological functions such as learning, executive, and motor functions. Most importantly, PSD could negatively influence the functional outcome after stroke and is a risk factor for low quality of life and high morbidity [9]. Mental distress associated with physical disability may contribute to the development of PSD. However, the higher prevalence of symptoms of depression in stroke patients compared with orthopaedic patients with a similar degree of disability may be a good argument against purely psychological explanations of PSD. Furthermore, anosognosia does not shield against PSD. Common mood symptoms after stroke include anxiety and feelings of despair as well as anhedonia. Antidepressant treatment initiated soon after stroke may prevent the emergence of PSD [10]. Frequency of depression assessed on HADS was 55 % in patients with ischemic stroke [11].

We planned this study to be ascertain PSD among stroke survivors and also to ascertain the role of different underlying factors.

MATERIAL AND METHODS;

All the cases of ischemic stroke (n= 96), fulfilling inclusion criteria were recruited from outdoor of Department of medicine, Nishtar Hospital Multan. Proper permission was taken from Institutional Ethical Committee to conduct this study. Patients with ischemic stroke having mild to severe disability, disease duration more than 3 months, age; 30-60 years, gender; both male and female patients were included. Patients with hemorrhagic stroke, coronary artery disease, hypothyroidism, cerebral venous sinus thrombosis, patients with chronic renal failure, chronic liver disease, rheumatoid arthritis and SLE and with previous history of depression/psychological problems before onset of stroke were excluded from our study. Informed consent was taken from each patient to participate in this study; they were briefed about objectives of this study, ensuring them confidentiality of the information provided and fact that there is no risk involved to the patient while taking part in this study. Once registered these study cases were assessed for depression using hospital anxiety and depression scale (HADS). The patients were categorized having depression or not having depression on the basis of hospital anxiety and depression scale (HADS) scoring ($\geq$ 8). This is a widely used scale measuring symptoms of anxiety and depression, which has been validated in clinical and healthy populations [11]. Data was entered and analyzed by computer program SPSS-18.

RESULTS;

Our study comprised of 96 patients with ischemic stroke who met inclusion criteria of our study. Of these 96 study cases, 50 (52.1 %) were male patients while 46 (47.9 %) were female patients. Mean age of our study cases was 49.17 ± 9.10 years (with minimum age of our study cases was 32 years while maximum age was 60 years). Mean age of the male patients was 52.20 ± 7.95 years while that of female patients was 46.38 ± 9.27 years (p=0.001). Our study results have revealed that majority of our patients i.e. 54 (56.3%) were aged more than 45 years. Of these 96 study cases, 45 (46.9 %) were from rural area while 51 (53.1 %) from urban areas, 29 (30.2 %) were diabetic and 58 (60.4 %) were hypertensive. Mean height of our study cases was 162.33 ± 12.32 centimeters and mean weight was 68.41 ± 7.79 kilograms. Mean body mass index (BMI) of our study cases was 24.12 ± 2.88 kg/m^2 and obesity was present in 17 (17.7 %). History of smoking was present in 21 (21.9 %) of our study cases. Mean disease duration of our study cases was 8.36 ± 4.31 months and 50 (52.1 %) had disease duration more than 6 months. Previous history of stroke was present in 16 (16.7 %) while family history of stroke was noted in 17 (17.7 %) of our study cases and 67 (69.8 %) were illiterate and 29 (30.2 %) were literate.

Of these 96 study cases, 46 (47.9%) were housewives, 16 (16.7%) were office workers, 21 (21.9%) were laborers and 13 (13.5%) were jobless. Depression was noted in 63 (65.6%) of our study cases.

Table No. 1

Stratification of depression with regards to gender.

Gender	Depression		P – value
	Yes (n = 63)	No (n = 33)	
Male (n = 50)	42	08	
Female (n = 46)	21	25	0.000
Total	96		

Table No. 2 Stratification of depression with regards to residential status.

Residential status	Depression		P – value
	Yes (n = 63)	No (n = 33)	
Rural (n = 45)	24	21	
Urban (n = 51)	39	12	0.020
Total	96		

Table No. 3 Stratification of depression with regards to hypertension.

Hypertension	Depression		P – value
	Yes (n = 63)	No (n = 33)	
Yes (n = 58)	29	29	
No (n = 38)	34	04	0.000
Total	96		

Table No. 4 Stratification of depression with regards to Smoking.

Smoking	Depression		P – value
	Yes (n = 63)	No (n = 33)	
Yes (n = 21)	04	17	0.000
No (n = 75)	59	16	
Total	96		

Table No. 5 Stratification of depression with regards to disease duration.

Disease duration	Depression		P – value
	Yes (n = 63)	No (n = 33)	
Up to 6 months (n = 46)	22	24	0.001
More than 6 months (n = 50)	41	09	
Total	96		

Table No. 6 Stratification of depression with regards to educational status.

Education	Depression		P – value
	Yes (n = 63)	No (n = 33)	
Illiterate (n = 67)	38	29	0.005
Literate (n = 29)	25	04	
Total	96		

DISCUSSION

Most studies throughout the world that have studied PSD have primarily examined prevalence rates of depression in patients examined in acute or rehabilitation hospital settings, community settings, or in outpatient clinics. Our study comprised of 96 patients with ischemic stroke who met inclusion criteria of our study. Of these 96 study cases, 50 (52.1 %) were male patients while 46 (47.9 %) were female patients. Different studies have documented male gender preponderance in patients with ischemic stroke. Javed et al [12] from Dera Gazi Khan also reported 61 % male patients showing male gender predominance which is in compliance as that of our study results. A study conducted by Saeed et al [13] also reported high male gender predominance with 61.1 % in patients with ischemic stroke which is similar to our findings. Similarly Farooq et al [14] from Faisalabad has documented 54 % male patients with ischemic stroke which is in compliance with our study results. Sico et al [15] also reported 58 % male gender preponderance which is similar to our study results.

Mean age of our study cases was 49.17 ± 9.10 years (with minimum age of our study cases was 32 years while maximum age was 60 years). A study conducted by Saeed et al [13] also reported 64.4 ± 11.5 years mean age which is slightly higher than that of the findings of our study. Khan et al [16] reported 58.11 ± 15.29 years mean age which is close to our study results. Soyama et al [17] from Japan also reported that mean age of men was 2.6 years higher than that of women. Our study results have documented similar findings which are in compliance with Soyama et al [17]. Abid et al [18] reported 55.96 ± 13.75 years mean age of the patients presenting with ischemic stroke which is similar to that of our study results.

Of these 96 study cases, 45 (46.9 %) were from rural area while 51 (53.1 %) from urban areas, 29 (30.2 %) were diabetic and 58 (60.4 %) were hypertensive. Mean body mass index (BMI) of our study cases was 24.12 ± 2.88 kg/m^2 and obesity was present in 17 (17.7 %). History of smoking was present in 21 (21.9 %) of our study cases. Sadreddini et al [19] also reported from Iran that patients with ischemic stroke presented with diabetes in 24 % patients, hypertension in 78 % patients and smoking in 20 %. Our results are in compliance with that of Sadreddini et al [19] from Iran. Khan et al [16] also reported diabetes in 36.6% and smoking in 32 % patients with ischemic stroke. These results are similar to that of our study results. Mean disease duration of our study cases was 8.36 ± 4.31 months and 50 (52.1 %) had disease duration more than 6 months while 67 (69.8%) had monthly family income up to Rs. 25000 and history of alcohol consumption was zero. Previous history of stroke was present in 16 (16.7 %) while family history of stroke was noted in 17 (17.7 %) of our study cases and 67 (69.8 %) were illiterate and 29 (30.2 %) were literate. Sadreddini et al [19] from Iran reported 18 % previous history of stroke which is close to our study results.

Depression was noted in 63 (65.6%) of our study cases. Vuletic et al [11] reported frequency of depression assessed on HADS was 55 % in patients with ischemic stroke [11] which is close to our study results. Another study from Portugal by Caiero et al [20] also documented 46 % depression after ischemic stroke which is in compliance with our study results. A study from Finland also reported high frequency of depression to be 41 % after ischemic stroke which is in compliance with our study results [21]. Nys et al [22] from Netherlands reported 52 % depression among patients with ischemic stroke which is close to our study results. Saxena et al [23] from India has reported 57 % depression among stroke patients which is close to our study results.

CONCLUSION;

Very high frequency of depression was observed in our study among patients having ischemic stroke. Depression was significantly associated with gender, residential status, smoking, hypertension, educational level, smoking, prolonged duration of illness and occupation. Clinicians treating stroke patients should anticipate depressive symptoms and diagnose them to treat them in early stages.

REFERENCES

1. Khan NI, Naz L, Mushtaq S, Rukh L, Ali S, Hussain Z. Ishemic stroke: Prevalence of modifiable risk factors in male and female patients in Pakistan. Pak J Pharm Sci 2009;22(1):62-7.
2. Khan SF, Zafar A, Malik A. Stroke in Pakistan: reality, challenges and a call for action. Pak J Neurol Sci 2008;3:14-9.
3. Feigin VL. Stroke in developing countries: can the epidemic be stopped and outcomes improved? Lancet Neurol 2007;6:94-7.
4. Okokhere PO, Bankole IA, Erohubie CA. Characteristics, risk factors, and case fatality rate of stroke in hospitalized patients in semi-urban South Nigeria. SAGE Open Medicine 2013; doi:10.1177/2050312113516112.
5. Zahra F, Kidwai SS, Siddiqi SA, Khan RM. Frequency of Newly Diagnosed Diabetes Mellitus in Acute Ischaemic Stroke Patients. J Coll Physician Surg Pak. 2012;22(4):226-9.
6. Abid N, Khan SA, Taseer IH. Frequency of Hyperlipidemia in Patients Presenting with Ischemic Stroke. Pak J Med Health Sci. 2012;6(2):423-7.
7. Zhang T[1], Jing X, Zhao X, Wang C, Liu Z, Zhou Y, et al. A prospective cohort study of lesion location and its relation to post-stroke depression among Chinese patients. J Affect Disord. 2012 Jan;136(1-2):e83-7
8. Zhang WN[1], Pan YH, Wang XY, Zhao Y. A prospective study of the incidence and correlated factors of post-stroke depression in China. PLoS One. 2013 Nov 18;8(11):e78981. doi: 10.1371/journal.pone.0078981.
9. Quaranta D[1], Marra C, Gainotti G. Post-stroke depression: Main phenomenological clusters and their relationships with clinical measures. Behav Neurol. 2012;25(4):303-10.

10. Loubinoux I[1], Kronenberg G, Endres M, Schumann-Bard P, Freret T, Filipkowski RK, et al. Post-stroke depression: mechanisms, translation and therapy. J Cell Mol Med. 2012;16(9):1961-9.

11. Vuletić V[1], Sapina L, Lozert M, Lezaić Z, Morović S. Anxiety and depressive symptoms in acute ischemic stroke. Acta Clin Croat. 2012 Jun;51(2):243-6.

12. Javid RA, Bhatti A, Azhar MA. Frequency of hypoalbuminemia in patients with ischemic stroke. Pak J Med Health Sci. 2016;10(2):571-73.

13. Saeed E, Ali R, Jalal-ud-din M, Saeed A, Jadoon RJ, Moiz M. Hypercholesterolemia in patients of ischemic stroke. J Ayub Med Coll Abbottabad. 2015 Jul-Sep;27(3):637-9.

14. Farooq MA, Anjum MS, Malik FA, Kalsoom N. Frequency of microalbuminuria in patients with ischemic stroke. Rawal Med J. 2013;38(2):97-99.

15. Sico JJ[1], Concato J, Wells CK, Lo AC, Nadeau SE, Williams LS, et al. Anemia is associated with poor outcomes in patients with less severe ischemic stroke. J Stroke Cerebrovasc Dis. 2013 Apr;22(3):271-8.

16. Khan MN, Khan HD, Ahmad M, Umair M. Serum total and HDL-cholesterol in ischemic and hemorrhagic stroke. Ann Pak Inst Med Sci 2014;10(1)22-26.

17. Soyama Y[1], Miura K, Morikawa Y, Nishijo M, Nakanishi Y, Naruse Y, et al. High-density lipoprotein cholesterol and risk of stroke in Japanese men and women: the Oyabe Study. Stroke. 2003 Apr;34(4):863-8.

18. Abid N, Khan SA, Taseer IH. Frequency of hyperlipidemia in patients presenting with ischemic stroke. Pak J Med Health Sci. 2012;6(2):423-28.

19. Sadreddini SA, Abolfathi AA, Khandaghi R, Talebi M, Lakian A. C-Reactive protein, fibrinogen, LP (a), lipid profile levels and platelet count in patients with ischemic stroke. Pak J Neurological Sci. 2006;1(1):7-13.

20. Caeiro L[1], Ferro JM, Santos CO, Figueira ML. Depression in acute stroke. J Psychiatry Neurosci. 2006 Nov;31(6):377-83.

21. Pohjasvaara T[1], Leppävuori A, Siira I, Vataja R, Kaste M, Erkinjuntti T. Frequency and clinical determinants of poststroke depression. Stroke. 1998 Nov;29(11):2311-7.

22. Nys GM[1], van Zandvoort MJ, van der Worp HB, de Haan EH, de Kort PL, Kappelle LJ. Early depressive symptoms after stroke: neuropsychological correlates and lesion characteristics. J Neurol Sci. 2005 Jan 15;228(1):27-33.

23. Saxena A[1], Suman A[1]. Magnitude and determinants of depression in acute stroke patients admitted in a rural tertiary care hospital. J Neurosci Rural Pract. 2015 Apr-Jun;6(2):202-7.