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VASCULAR COGNITIVE IMPAIRMENT IN FIRST EVER ISCHEMIC STROKE SURVIVORS

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ABSTRACT

Objectives: Stroke and transient ischemic attacks (TIA) are highly prevalent in Pakistan. Post stroke dementia (PSD) is one of the main causes of dependency in survivors and includes any dementia after a stroke, irrespective of its cause, which includes vascular, degenerative, or mixed. Many Independent survivors have residual physical or cognitive deficits, or behavioral changes which can affect family life and have professional consequences. **Study design:** Cross sectional study at Department of Neurology CMC Hospital Larkana from Aug-2014 to Jan-2015 to find out frequency of dementia in first ever ischemic stroke patients, its severity and outcome. **Methods:** Study approved from ethical review committee of the institute. Patients 30-60 years of age, of either gender, previously non-demented with first episode of ischemic stroke were included in this study after informed consent. Patients of Hemorrhagic stroke, Parkinson's disease, Terminal cancers and those on steroids were excluded. Stroke confirmed by CT scan brain/ MRI showing new infarcts. Dementia was defined as per MMSE dementia interview at baseline and 3 months of follow up. Score of <23 indicated cognitive impairment. Activity of daily living was assessed by AD8 screening interview. Score >2 indicated impairment in activity of daily living. **Results:** 120 patients were included in the study during 6 month period with mean age of 54(±3.4) years. Among them 74 were males and 46 were females. 52 (43.33%) patients had a lacunar stroke, 43(35.8%) a MCA infarct, 13(10.83%) with ACA infarct, 12 (10%) a posterior circulation stroke. Among vascular risk factors hypertension present in 32 (26%), diabetes in 22(18.3%), atrial fibrillation in 11(9.16%), previous myocardial infarction 10(8.33%) and history of transient ischemic attack 34(28.33%). Their medical history, neurological deficit, activity of daily living, a blood screen and extent of vascular territory of the stroke were recorded. MMSE at 3 month of stroke follow up performed which revealed <23 score among 33(26%) patients. The activity of daily living was impaired among the demented patients. Recall, language and attention was impaired more than registration and orientation. **Discussion:** Patients with PSD have high mortality rates and are likely to be functionally impaired. The progressive decline of recall and forgetfulness observed in our study severely affect the activity of daily living. The best way to prevent dementia is preventing vascular risk factors and the stroke by medications and follow up. **Conclusion:** Stroke patients should be assessed with dementia and monitored regularly with structured MMSE and activity of daily living as part of routine check up to prevent mortality and morbidity in stroke survivors.

Key words: Dementia, AD8, MMSE, Lacunar infarct, PSD, Parkinsons disease, Cognitive impairment.

INTRODUCTION

Stroke is the major cause of physical disability in adults, the second most common cause of dementia, and the third leading cause of death (after coronary-artery diseases and cancers).[2] Vascular cognitive impairment is decline caused by ischemic, hemorrhagic, or oligemic injury to the brain as a consequence of cerebrovascular disease.It is one of the main causes of dependency in survivors and includes any dementia after a stroke, irrespective of its cause, which includes vascular, degenerative, or mixed. A huge increase in prevalence and burden of PSD is likely to happen because of the decline in mortality after stroke and ageing of populations.[1] The 24 year study also indicated that prevalence of Post stroke Dementia associated with lacunar stroke was 7 times higher than other types of stroke, including Intracerebral hemorrhage[6]. According to Nys et al., a high proportion of stroke survivors developed the cognitive impairment within 3 months of stroke. In hospital-based studies, the prevalence of PSD ranges from 5•9 to 32%.[3,4] In another study prevalence of PSD was 27.2%[3]. In community-based studies with adjustment for age, the prevalence of

dementia in people with a history of stroke is about 30%, which is 3.5–5.8- times higher than in those who have not had stroke.[3,5] The 5-year survival rate is 39% for patients with vascular dementia compared with 75% for age-matched controls. Vascular dementia is associated with a higher mortality rate than AD, presumably because of the coexistence of other atherosclerotic diseases. Stroke is one of the main causes of disability in the population. PSD is further worsening quality of life of patients as well as other people and relatives living with them. The data regarding this problem is not available from Pakistan. The aim of this study will be to determine the burden of dementia in patients of stroke so intervention can be made to help peoples with PSD to cope with daily life.

OBJECTIVE OF STUDY

To find out frequency of vascular cognitive impairment in first ever ischemic stroke survivors, its severity and 3 months outcome.

METHODOLOGY

Cross-sectional study at Department of Neurology CMC Hospital, SMBBMU Larkana from Aug-2014 to Jan-2015. Cases fulfilling the DSM-5 criteria were included in the study after informed consent: Evidence of cognitive decline from a previous level of performance in one or more cognitive domains.

B. The clinical features consistent with a vascular etiology as suggested by either of the following:
1) Cognitive deficits is temporally related to one or more cerebrovascular events;
2) Decline is prominent in complex attention and frontal executive functions.

C. There is evidence of the presence of cerebrovascular disease

D. The symptoms are not better explained by another brain disease or systemic disorder.

Data was collected for age, sex, smoking status, education level, vascular risk factors, area of infarct, neuropsychological assessment and activity of daily living by AD8 scoring system. Both the in-patients and outpatient cases were included. Data was collected by researcher himself and analysis was done on SPSS version[19]. Patients of 30-60 years of age, of either gender, previously non demented with first episode of ischemic stroke confirmed by CT/MRI were included after informed consent. While cases of Hemorrhagic

stroke, old stroke, known cases of Parkinson's disease, neurodegenerative disorders(AD,LBD,FTD) or Terminal cancers were excluded from the study. All patients were put on stroke protocol and their medical history, neuropsychological assessment, activity of daily living, a blood screen ,cardiac screen, and vascular involvment of the stroke were recorded.

RESULTS

Total 120 patients were included in the study during 6 month period with mean age of 52($\pm$3.4) years. Among them 74(61.6%) were males and 46(38.3%) were females.
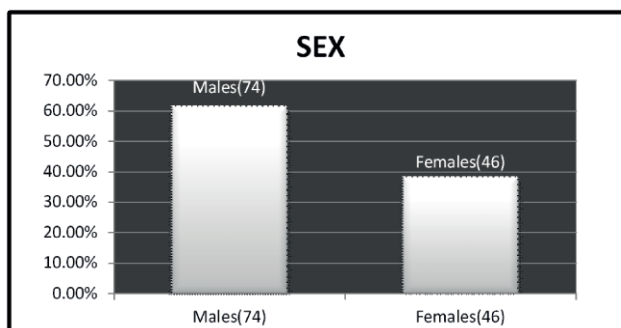
There were 48(40%) of patients in age range of 41-50 years group and 40(33.3%) In 51-60 yand 32(26.6%) in 31-40 Years of age.
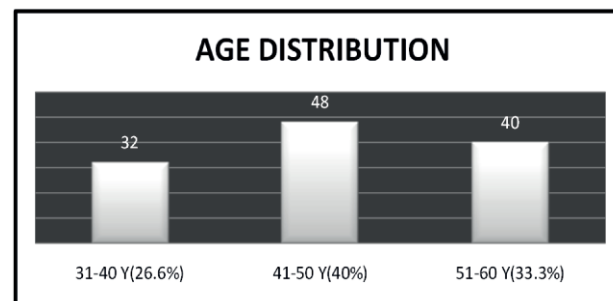

There were n=50(41.66%) patients in matriculated group while n=49(41%) were graduate and n=21(17.5%) in uneducated group.
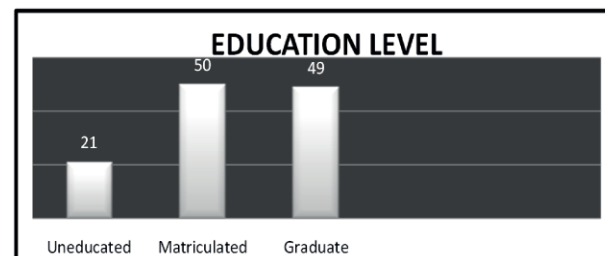

Among total 120 patients 34(28.3%) patients were smokers.

There were more number of patients having lacunar stroke 52(42.2%), middle cerebral artery infarct

42(25.9%), 12(10%) anterior cerebral artery infarcts and posterior cerebral artery infarcts while 2(1.6%) had cortical or watershed infarct.


DISTRIBUTION OF INFARCTIONS ON CT/MRI
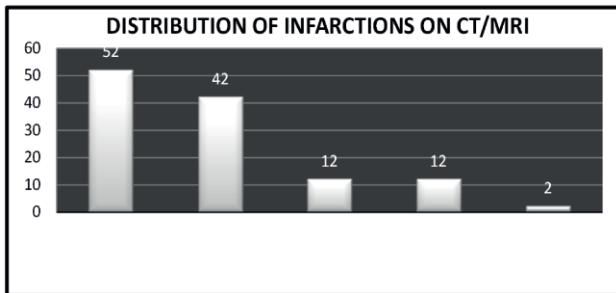
Hypertension was most common vascular risk factor which was present in 32(26%) while Diabetes mellitus in 22(18.3%), Atrial fibrillation in 11(9.16%), previous history of Myocardial Infarction in 10(8.33%) and Transient Ischemic Attack in 20(28.33%) of patients.


VASCULAR RISK FACTORS
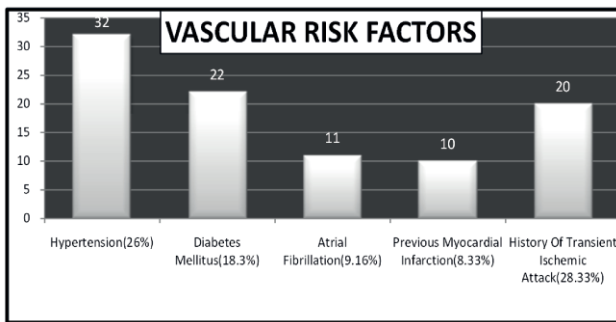
Mini mental status examination at 3 months follow up revealed <23 score among n=33(26%) patients and 8 patients had score of less than 18.


MMSE SCORE AT 3 MONTHS
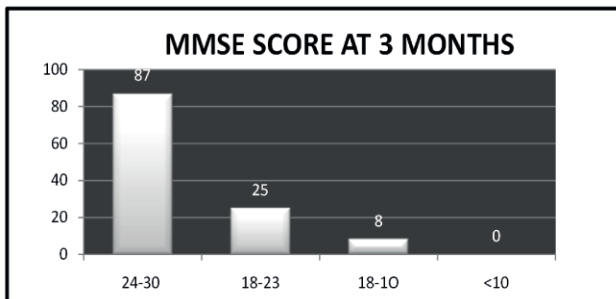
Among the MMSE questionnaire Language, Attention and calculation was more impaired as compared to orientation, recall and registration.

MMSE
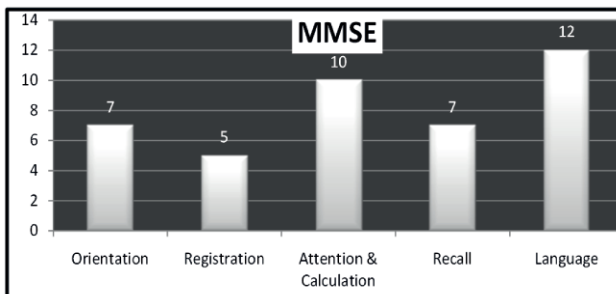
Activity of daily living was assessed by AD8 scoring system which revealed trouble handling financial affairs, remembering appointments, using gadgets and problem in decision and thinking. Repetititon of questions, stories and statements was less frequent problem.
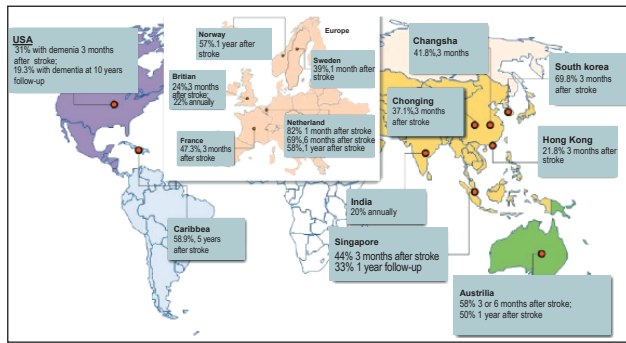

ACTIVITIES OF DAILY LIVING
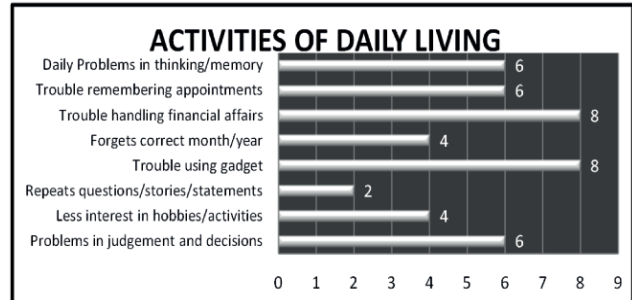
The male patients were more in number with associated mild cognitive impairment, mild, moderate or severe dementia as compared to female patients.

DISTRIBUTION OF DEMENTIA IN MALES/FEMALES
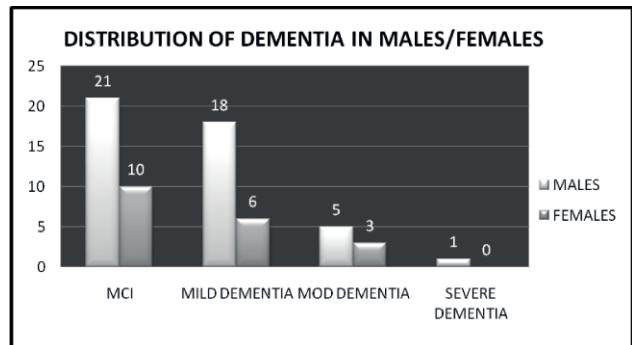
DISCUSSION

Among the 120 cases of first ever ischemic stroke <23 score was present in n=33(26%) as assessed by Mini Mental status examination. There is progressive decline of recall and forgetfulness observed in our study. The stroke survivors had impaired activities of daily living. There were more number of hypertensive and diabetic patients in our study who developed the cognitive impairment. The best way to prevent dementia is to treat vascular risk factors and secondary prevention of stroke by medications and monitoring of lipids, blood pressure, blood sugar, cardiac profile, renal profile and cognition by MMSE. The study on 2,932 participants from Coronary Artery Risk Development in Young Adults study suggested that keeping weight, healthful diet, nonsmoking, physical activity, and controlling cholesterol, blood pressure, and fasting glucose were related to the better performance on cognition in later life.[7] The study on patients with VCI of no-dementia suggested 3-month treatment of Ginkgo Biloba could improve the cognitive function as measured by MoCA scores and the cerebral blood flow[8].

World wide Prevalence Of Vascular Dementia

Region	Data
USA	31% with demenia 3 months after stroke; 19.3% with dementia at 10 years follow-up
Norway	57%,1 year after stroke
Britian	24%,3 months after stroke, 22% annually
Europe	
Sweden	39%,1 month after stroke
Changsha	41.8%,3 months
South korea	69.8% 3 months after stroke
France	47.3%,3 months after stroke
Netherland	82% 1 month after stroke 69%,6 months after stroke 58%,1 year after stroke
Chonging	37.1%,3 months after stroke
Hong Kong	21.8% 3 months after stroke
Carribbea	58.9%, 5 years after stroke
India	20% annually
Singapore	44% 3 months after stroke 33% 1 year follow-up
Austrilia	58% 3 or 6 months after stroke; 50% 1 year after stroke

There are 31% dementia cases 3 months after stroke in USA while 58% cases of vascular dementia in Australia. In India prevalence is 20% annually.

CONCLUSION

Patients with PSD have high mortality rates and are likely to be functionally impaired. Both the demographic factors like age, education and occupation and vascular factors count for the high risk of post-stroke cognitive impairment. Stroke patients should be assessed with dementia and monitored regularly with structured MMSE and activity of daily living as part of routine check up to prevent mortality and morbidity in stroke survivors.

REFERENCES

1. Rothwell PM, Coull AJ, Giles MF. Change in stroke incidence, mortality, case-fatality, severity, and risk factors in Oxfordshire, UK from 1981 to 2004: Oxford Vascular Study. Lancet. 2004;363:1925–33.
2. Murray CJ, Lopez AD. Global mortality, disability, and the contribution of risk factors: global burden of disease study. Lancet. 1997;349:1436–42.
3. Zhou DH, Wang JY, Li J, Deng J, Gao C, Chen M. Study on frequency and predictors of dementia after ischemic stroke: the Chongqing stroke study. J Neurol. 2004;251:421–7.
4. Tang WK, Chan SS, Chiu HF. Frequency and determinants of poststroke dementia in Chinese. Stroke. 2004;35:930–5.
5. Mok VC, Wong A, Lam WW. Cognitive impairment and functional outcome after stroke associated with small vessel disease. J Neurol Neurosurg Psychiatry. 2004;75:560–6.
6. Bejot Y, Aboa EC, Durier J, Rouaud O, Jacquin A, PonavoyE et al. Prevalence of early dementia after first-ever stroke : a 24-year population-based study. Stroke 2011; 42:607-12.
7. Reis JP, Loria CM, Launer LJ, et al. Cardiovascular health through young adulthood and cognitive functioning in midlife. Ann Neurol 2013;73:170-9
8. Zhang SJ, Xue ZY. Effect of Western medicine therapy assisted by Ginkgo biloba tablet on vascular cognitive impairment of none dementia. Asian Pac J Trop Med 2012;5:661-4.