

Original Research Article

Post stroke psychiatric syndrome: a clinical study

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ABSTRACT

Background: Various psychiatric symptoms are seen after strokes which are usually deserted due to poor familiarity about it, hence better knowledge and understanding of various post stroke psychiatric manifestations may help in early identification and management of it. The aim of present research is to study the demographic and clinical profile of various post stroke psychiatric manifestations.

Methods: The study was conducted on ninety patients developing psychiatric symptoms after stroke. Detailed socio-demographic characteristics, clinical profile along with psychiatric assessment were recorded in proforma specially designed for the study.

Results: Bulk of this post-stroke psychiatric subjects (45%) was in the age range of 61-80 years of which male and female were 29% and 16% respectively. Most of patients (90%) were residing at rural areas. 47.8 % patients were belonging to lower middle socio-economic status. Majority of subjects (42.8%) were unemployed followed by farmer and skilled worker (20% each), and most of the patients were right handed (97.8%). On clinical parameters maximum subjects (52.2) developed post stroke major depression followed by depression mixed with anxiety (16.6%). Rest of patients suffered from organic anxiety disorder (8.8%), vascular dementia (10%), amnesic syndrome (5.5%), post stroke psychosis (3.3%), organic manic disorder (2.2%), pathological laughter and crying (1.1%).

Conclusions: Huge number of patients (52.9%) developed psychiatric problems of diverse nature among patients with stroke syndrome. depression was most common post stroke psychiatric manifestation, followed by mixed anxiety with depression. Generally the post stroke psychiatric manifestations are unrecognized and untreated, which has adverse impact on process of stroke rehabilitation. Thus a detailed psychiatric evaluation is mandatory in all patients of stroke syndrome to rule out psychiatric illness.

Keywords: Clinical profile, Depression, Post stroke psychiatric syndrome, Sociodemographic

INTRODUCTION

WHO stroke definition is "A focal (or at times global) neurological impairment of sudden onset and lasting more than 24 hours (or leading to death) and of presumed vascular origin". The definition excludes (TIA), subdural haemorrhage, epidural haemorrhage, poisoning, and symptoms caused by trauma are also excluded.¹

Stroke is one of the most common causes of morbidity and mortality in the world. The WHO estimates that 15 million people are diagnosed with stroke each year

worldwide.² Emerging life style disorder, overwhelming stress, dietary habits, over competitiveness have significantly increased the risk of Hypertension, Diabetes Mellitus, and Dyslipidaemia etc. which increase stroke incidence.³

Stroke patients have various neurological and behavioural residual deficits. Neurological disabilities are often remains the main focus of treatment and managed effectively. On the contrary residual behavioural deficits are invariably neglected and considered merely psychological consequences of stroke.⁴ comparative

studies on disability due to stroke and other devastating illnesses show a significant higher percentage of behavioural disabilities in stroke.⁵ so it can be inferred that these behaviour changes are not merely psychological but are related to the neuroanatomical and neurophysiological alteration in brain after stroke. Neuroimaging provide us with ample evidence in favour of a biological substratum of psychiatric manifestations following stroke syndrome.⁶ As a result, there has been a resurgence of interest in proper identification of various organic psychiatric disorders, their underlying mechanisms, anatomical and clinical correlations and overall management using various pharmacological agents.

Psychiatric symptoms play an important role in overall disability and quality of life in stroke syndrome. Very often due to overlapping of psychiatric disorders, the cognitive deficit following stroke syndrome appears more apparent than the real magnitude of the illness.⁷ so early identification of psychiatric disorders following stroke can achieve better results.

METHODS

Present observational prospective study consisted of 90 patients diagnosed using ICD-10 criteria, was conducted in the Dept. of Psychiatry and Dept. of Medicine of SGM Hospital, Rewa, Madhya Pradesh, presenting with psychiatric manifestations after stroke.

Inclusion criteria

Patients with definite history of recent onset stroke (>2 weeks but <6 months), having ability to communicate verbally with the investigator and gave informed consent were included in the study.

Exclusion criteria

Patients with unconsciousness, altered sensorium, aphasia, significant cognitive disturbances, past history of stroke, neurological disorders, psychiatric illness, drug dependence, and severe medical illnesses were excluded. Study duration was from February 2018 - August 2019.

A complete medical and psychiatric, history of 90 patients inducted into study was done by using a semi-structured proforma. Many factors that confound the association between stroke and depression, all potentially important variables such as age, sex, sociodemographic profile, cognitive deficits, functional disability, and the location of lesion were included in the proforma. The patients were evaluated for behavioral disturbances and interviewed using the Mini International Neuropsychiatric Inventory (MINI) Plus for the diagnosis of psychiatric morbidity as per ICD-10 guidelines.⁸ Cognitive function was assessed by using Mini Mental Status Examination and Montreal Cognitive Assessment.⁹ Psychiatric rating scales (MBPRS, HAM-D, HAM-

ANXIETY, YMRS) were used for psychosis, depression, anxiety and mania respectively.¹⁰⁻¹² For depression, Beck Depression Inventory and objective Montgomery Asberg Depression Rating Scale also used.^{13,14} CT scan and MRI were done in each patient to locate the site of lesion. Localization was also broadly based on the site of lesion - cortical, sub-cortical, cerebellum and brain stem.

The results were subjected to statistical analysis using student's t-test (continuous variables) and chi-squared test (categorical variables) to achieve significant of various clinical variable ($p < 0.05$). Study was analyzed by using SPSS v21 by appropriate statistical analysis.

RESULTS

In the above mentioned study, 90 diagnosed cases of post stroke psychiatric disorder following the inclusion criteria were enrolled in to the study. Patient's socio-demographic variables (age, sex, socio-economic status, occupation, domicile, family type, and education) were studied.

Table 1: Socio-demographic variables in terms of frequency and percentage (n=90).

Age (in years)	Patients number (N=90)	%
20-40	9	10
41-60	25	28
61-80	41	45
>80	15	17
Total	90	100
Socio economic status		
Upper	-	-
Upper middle	10	11.1
Lower middle	43	47.8
Upper lower	35	38.9
Lower	2	2.2
Total	90	100
Domicile		
Rural	81	90
Urban	9	10
Total	90	100
Occupation		
Unemployed	38	42.2
Skilled worker	18	20.0
Unskilled worker	16	17.8
Shop owner/ clerical/ farmer	18	20.0
Professional	-	-
Total	90	100

Table 1 shows bulk of this post- stroke psychiatric subjects (45%) was in the age range of 61-80 years of which male and female were 29% and 16% respectively. Most of patients (90%) were residing at rural areas. 47.8% patient were belonging to lower middle socio-economic status followed by upper lower (38.9%).

Majority of subjects (42.8%) were unemployed followed by farmer and skilled worker (20% each), while most of the patients were right handed (97.8%).

On clinical parameters maximum subjects (52.2) developed post stroke depression followed by depression mixed with anxiety (16.6%). Rest of patients suffered from vascular dementia (10%), organic anxiety disorder (8.8%), amnesic syndrome (5.5%), post stroke psychosis (3.3%), organic manic disorder (2.2%), pathological laughing and crying (1.1%) shown in Table 2.

Table 3 and 4 revealed that out of 90 patients (60%) had left hemispheric lesions while (40%) had right hemispheric lesions, (59%) had cortical and (41%) had subcortical lesions. In right hemispheric lesions, 23.5% of patients had major depression, while GAD and depression mixed with anxiety were present in 17.6% and 11.7% patients respectively. Multi Infarct dementia was present in 20.5% and Amnesic syndrome, organic manic syndrome, post-stroke psychosis were present in 8.8%,

5.8%, and 8.8% patients respectively. In left hemispheric lesions 69.6% had major depression and, 3.5% of patients had GAD, 19.6% of patients had depression mixed with anxiety, and 3.5% patients dementia.

Table 2: Incidence of psychiatric disorder following stroke syndrome.

Psychiatric disorder	Number (N=90)	%
Post stroke depression	47	52.2%
Organic anxiety disorder (GAD)	8	8.8%
Depression mixed with anxiety	15	16.6%
Organic manic disorder	2	2.2%
Amnesic syndrome	5	5.5%
Vascular dementia	9	10%
Pathological laughing and crying	1	1.1%
Post stroke psychosis (schizophrenia like)	3	3.3%
Total	90	100%

Table 3: Psychiatric manifestations in correlation to hemispheric lesions.

Psychiatric illness	Right hemispheric lesions N=34	Left hemispheric lesions N=56	Total
Post stroke depression (47)	8(23.5%)	39(69.6%)	47
Organic Anxiety Disorder (GAD) (8)	6(17.6%)	2(3.5%)	8
Depression mixed with anxiety disorder (15)	4(11.7%)	11(19.6%)	15
Post stroke mania (2)	2(5.8%)	-	2
Amnesic syndrome (5)	3(8.8%)	2(3.6%)	5
vascular dementia (9)	7(20.5%)	2(3.5%)	9
Pathological laughing and crying (1)	1(2.9%)	-	1
Post stroke psychosis(schizophrenia like) (3)	3(8.8%)	-	3
Total	34	56	90

Table 4: Relationships of psychiatric manifestations to intra-hemispheric lesions

Psychiatric illness	Right hemispheric lesions N=34		Left hemispheric lesions N=56		Total
	Cortical (n=23)	Subcortical (n=11)	Cortical (n=30)	Subcortical (n=26)	
Post stroke depression (47)	5(21.7%)	3(27.2%)	15(50%)	24(92.3%)	47
Organic Anxiety Disorder(GAD) (8)	6(26 %)	0	2(6.6%)	0	8
Depression mixed with anxiety disorder (15)	4(17.4 %)	0	11(36.6%)	0	15
Organic manic disorder (2)	1(4.3 %)	1(9.1%)	0	0	2
Amnesic syndrome (5)	1(4.3%)	2(18.2%)	0	2(8%)	5
Vascular dementia (9)	5(21.7%)	2(18.2%)	2(6.6%)	0	9
Pathological laughing and crying (1)	0	1(9.1%)	0	0	1
Post stroke psychosis(schizophrenia like) (3)	1(4.3%)	2(18.2%)	0	0	3
Total	23	11	30	26	90

DISCUSSION

The present study was envisaged in stroke patients hospitalized in the department of psychiatry. SGMH, Rewa, (Madhya Pradesh). Identification of post stroke

psychiatric manifestations was the major objective. Being a hospital-based study, the results cannot be generalized on larger population.

Incidence psychiatric co morbidities were higher in stroke patients as compared to magnitude in general population and is well confirming with earlier studies.^{15,16}

Sociodemographic variables

Age

The majority of patients 35.5% were in the age group of 61-80 years followed by above 80 years group (25.5%). 21.1% patients developed post stroke behavioural disturbances in the late middle group. Only 17.8% patients were in the early middle age group. The present study supports the notion that stroke is a disease of mainly older age group and is well consistent with results of other researchers (Table 1).^{15,17}

Sex

Males outnumbered females (60%:40%). Such a sex predilection gets support from earlier literature which also stated that females have on an average 30 % lower incidence of stroke than males (Table 1).¹⁸ The different hormonal profile including the role of estrogen along with other risk factors could explain such discrepancy.

Socioeconomic status

The majority of subjects (47.8%) belonged to lower-middle socioeconomic status followed by upper-lower (38.9 %). Rest (11.1%) and (2.2%) belonged to upper-middle and a lower class respectively (Table 1). This simply seems to be due to the socioeconomic structure of the community in this region and hence increased affinity of a stroke cannot be linked only to the middle class, as also were mentioned in Park textbook.¹⁸

Domicile

The majority of this patients (90%) hailed from rural areas while 10% were from urban areas (Table 1). This is due to rural dominance in this subcontinent and is a confounding variable to indicate a high incidence of stroke in rural areas.

Occupation

The majority of patients were unemployed (42.2%) followed by a skilled workers and farmer 20% each. 17.8% of patients were Unskilled (Table 1). The majority of males were skilled while females were a housewife. The existing literature highlights that both coronary artery disease and stroke syndrome are a disease of the affluent group.¹⁹ Current study however does not support this concept.

Post stroke depression

In the present study, the incidence of major depression following stroke syndrome was 52.2% (Table 2). Robinson (2010) also reported post stroke depression in about 40% patients. In various other studies, the incidence of post-stroke depression ranged from 29 % to 63%.^{15,20}

The majority of patients of post-stroke depression were predominantly males in fifties and sixties. So it may be concluded that males are more vulnerable to develop depression due to more liability toward family members, finances and hence greater realization of disability. Since there is no difference in major depression with respect to sex, (male 55.5% vs female 47.2%). The site of lesion is the crucial factor instead of various environmental factors in the aetiopathogenesis of post stroke depression.²⁰

Results of present study indicate that patients with left hemispheric lesion have a higher incidence of major depression (69.6%), compared to right hemispheric lesions (23.5%) respectively (Table 3). This findings supported the notion of cerebral laterality and highlighted the fact that the majority of depression was confined to the left hemisphere. (Pooja Rajashekar 2013).²¹

Depression mixed with anxiety disorders

In this study, 17% patients presented with depression mixed with anxiety (Table 2). The majority of these patients were in their fifth and sixth decades, while 2 patients were in their early middle life. On Mental Status Examination, revealed mixed features of mild depression and marked anxiety.

Table 4 of this study revealed that the patients with left cortical lesions (36%) have a higher incidence of depression mixed with anxiety than left subcortical (17%) as well as right side lesion and is in confirmatory with the earlier results of Sergio (1990), and Jong S. Kim (2016) who reported higher incidence of depression plus anxiety remains in left cortical lesions.^{22,23}

Vascular dementia

In the present study vascular dementia constituted another important diagnostic category of post stroke syndrome and was similar to earlier observations.^{24,25} It was further observed that in vascular dementia, multi infarct dementia was higher (8%) than subcortical (2%) (Table 4).

Cortical dementia

At which 4% of patients with cortical dementia maintained clinical features of dementia over a period of one month following a stroke. One patient had a history of long-standing hypertension. Two patients had more than two episodes of TIA in the past and were

characterized by brief impairment of consciousness, visual disturbances, headache, numbness and fleeting paresis in the right side of the body.²⁶ MSE showed memory impairment, some cognitive decline, impaired abstract thinking, language and calculation. CT scan of these patients found multiple infarcts in the right cortical and parieto-temporal regions.²⁷ history of hypertension and TIA act as important risk factor for post stroke cortical dementia.

Subcortical dementia

In the subcortical category 2% of patients had a history of weakness in the left upper and lower limb, slurring of speech, facial weakness and abnormal behaviour in the form of indifference, apathy, irritability and somatic symptoms.

All subcortical dementia patients had a history of long-standing hypertension. Earlier researchers also reported hypertension to be the most crucial factor in the aetiopathogenesis of subcortical dementia. On examination, patients had pseudo bulbar palsy with stiff stumbling gaits, dysarthria, and pyramidal tract sign on the left side of the body.

Mental examination showed marked apathy, slowed thought process, shallow affect, emotional lability, impaired cognitive function and memory. Insight and judgment remain intact. CT scan showed lacunar infarcts in right subcortical region.²⁷

Patient with subcortical dementia are often missed diagnosed as depressive disorder and are often kept on antidepressant therapy without favorable outcome. Investigators propose that the subcortical dementia should not be invariably miss-diagnosed and miss-managed as depressive disorder and proper exploration should be made to unveil underlying co-morbid depression if any.

Organic anxiety disorder (gad)

GAD was significantly less observed 8.9% (Table 2). This may be well explained due to the fact that the depletion of various biogenic amines in such lesions results in depressive symptoms and not in anxiety disorders. The other studies also highlight the preponderance of depression over anxiety disorders.^{28,29} In contrast to functional anxiety disorders which are more common in females and younger age group, the patients in present study belonged to late middle and old aged males and most likely had organic anxiety disorders than a functional one. The organic anxiety disorder emerged in the advanced group and thus indicates the biological basis of organic anxiety disorders.²⁹ the anxiety disorder in this patient had an onset within 3 months of stroke. Such early onset may be due to development of stroke relatively earlier in the advanced age group and such an early onset of an anxiety disorder requires further

exploration. Table 4 revealed that right posterior cortical lesion (75%) is mainly concerned with organic anxiety disorders as compared to left subcortical lesions (25%). It was also reported by (Carlos 1993, Broomfield 2014).^{28,29} Left posterior subcortical lesions manifesting anxiety disorder could be the early stages of depressive syndrome in evolution.

Amnesic syndrome

Five patients (5.5%) presented with the features of amnesic syndrome (Table 2). The clinical presentation was in form of withdrawn Behaviour, apathy, indifference, aimless wandering, not doing any responsible work, not participating in any family and surrounding activities.

Memory revealed poor registration and immediate recall, along with impaired recent memory. There was no impairment of intelligence and general fund of knowledge. Judgment and insight was impaired. CT scan further confirmed the diagnosis of an ischemic lesion on the brain mainly on right-sided subcortical areas. Danet (2015) and Graft Radford (1990) also reported that patients with bilateral medial thalamic infarctions may have permanent anterograde amnesia.³⁰

Post stroke psychosis

In this study, 3.3% patients developed psychosis simulating with schizophrenic psychosis following stroke. All patients were elderly and had lesions in the right subcortical and cortical areas (Table 2 and 4).^{31,32} the diagnosis was primarily based on exclusion of genetic loading, past history of neuropsychiatric disorder and relatively late in onset.

Post stroke mania

In this study, two patients had developed manic-like presentation following stroke (Table 2 and 4). Both patients had a lesion in the right subcortical and cortical areas. It appears that secondary mania following a stroke syndrome is related to damage in the right hemispheric area.³³

Pathological laughter and crying

One patient presented with features of pathological laughing and crying, and had a lesion in the right anterior subcortical regions.³⁴

CONCLUSION

A total number of 90 patients suffering from stroke syndrome were thoroughly studied for the presence of any psychiatric disorder. Among the post-stroke psychiatric disorders, depression is the commonest and major sequelae of stroke syndrome (52.2%). Generally, the post strokes psychiatric manifestations are

unrecognized and untreated which has an adverse impact on the process of stroke rehabilitation or increases the morbidity and mortality of patients, further vulnerability to develop stroke.

The site of lesion and the interruption of biogenic amine pathways are the most crucial factor in the aetiopathogenesis of various psychiatric manifestations following a stroke syndrome.

A detailed psychiatric evaluation is mandatory in all patients of stroke syndrome to rule out psychiatric illness and all patients above 50 years developing abnormal behaviour should be carefully examined for underlying cerebrovascular deficits.

The majority of post-stroke psychiatric disorders had a favourable therapeutic response with psychiatric intervention. In spite of the “post stroke psychiatric syndrome” are take complacently and there cursory evaluation deprive them of psychiatric consultation. Also social stigma tagged with psychiatric consultation both on family members and physicians also hampers the holistic psychiatric care. So training for identification of post stroke psychiatric manifestations also imparted to family members and treating physicians.

It is, therefore, our recommendation that stroke syndrome should be viewed in a bio psychosocial model, and a holistic approach consisting of both physical and psychiatric management should be directed to achieve better results.

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