

ONE YEAR LONGITUDINAL STUDY ON NEUROPSYCHIATRIC COMPLICATIONS IN POST STROKE PATIENTS

Ravi Kumar Rana¹, Sanjay Gupta², D. K Sharma³, C. S. Sushil⁴
Lecturer LLRM Medical college, Meerut¹, BHU, Varansi^{2,3}, G. M. C. Kota⁴
Email: drravirana@gmail.com

ABSTRACT

Background: Psychiatric illnesses are common in post stroke patients & found in about half of the patients; reason may be injury to the brain, stress, disability or any other. This is the first follow up study on the neuropsychiatric complications particularly in India.

Aim: The purpose of the study was to know the trend of various psychiatric disorders in post stroke patients during 1 year follow up.

Material and Methods: Depression, Anxiety & other neuropsychiatric disorders were assessed repeatedly for a period of 1 year in 100 stroke patients taken by simple random sampling. All these patients were evaluated on a specially designed proforma, BDI, HAMA & MMSE. C T scan (head) of every patient was taken.

Results: After 1 month of stroke neuropsychiatric complications were found in 49% of the patients. Commonest psychiatric morbidity was depression which was found in (34%) of patients followed by anxiety disorders (24%), cognitive impairment (21%), anosognosia (11%), psychosis (9%), mania (3%) & 2% of the patients were found to be suffering from catastrophic reaction. After 3 months, 6 months & 1 year of stroke psychiatric illnesses were found in 33.6%, 29% & 28% of the patients respectively.

Conclusion:

About half of the post stroke patients had psychiatric illnesses, in which the depressive disorders were most common followed by anxiety disorders & cognitive impairment. During the follow up at 3 months, psychiatric illnesses were found in 1/3rd of the patients & there were no substantial changes at 6 months & 1 year follow up.

Key Words: Stroke, Anosognosia, Catastrophic reaction.

Introduction:

The Neuropsychiatric (NS) disorders associated with stroke have been recognized for more than 100 years. Neurologist & Psychiatrist, such as Hughlings Jackson (1915) & Adolf Meyer (1904), have recognized that emotional disorders after cerebral infarction constitute an important sequel of stroke. [1,2]

Recent studies have concluded that neuropsychiatric complications (i.e., emotional, behavioural, and cognitive disorders) may have a negative effect not only on the social functioning and overall quality of life of stroke survivors, but also on the recovery of their motor functioning as well. [3,4]

Both stroke and affective illnesses are common, but how often they coexist remains unclear. Reported rates of depression after stroke have ranged from 14 to 60% depending on factors such as populations sampled,

time of assessment after stroke, and diagnostic instruments used. Equally unclear is the relation between lesion location and psychiatric illness. With studies reporting an association between depression and left anterior lesions, [5,6,7] right hemispheric lesions or no association with right or left cerebral pathology, [8] the debate continues.

Objectives:

The objectives of this study were to (1) determine the prevalence of various neuropsychiatric complications after 1 month of stroke (2) examine the longitudinal course of various neuropsychiatric complications after stroke (3) to find out the distribution of neuropsychiatric complications in post stroke patients according to site of lesion.

Study Design:

To fulfill the above objectives a prospective study was conducted in the M.B.S. Hospital, Kota, attached to the Govt. Medical College Kota. Before starting the study, approval of the Principal & Controller, Govt. Medical College & Ethical committee of the college was taken.

Sample of Study:

100 cases of established diagnosis of stroke confirmed by the Neurologist (based on CT finding), who were well enough to complete the assessment & those were ready for follow-up for 1 year constituted the sample of study. The stroke diagnoses were cerebral infarction in 79% & intracerebral hemorrhage in 21% of the patients. The sampling technique applied for taking the sample was Simple Random Sampling. Written informed consent was taken from every patient. Patients who had any other major illness & who were unwilling & uncooperative for Psychiatric evaluation were excluded from the study.

Method of Study:

All subjects who fulfilled the inclusion & exclusion criteria were evaluated in detail by using especially designed semistructured proforma which included socio-demographic data & ADL (activities of daily living). Historical data: including complaints, details of stroke like site, nature, severity, duration, associated physical illness, drug abuse, h/o psychiatric illness & Mental Status Examination. All the patients were also assessed on BDI, HAMA & MMSE. Psychiatric diagnosis was made according to ICD 10 (F 0-F 09). We decided to start the study after one month of stroke to stabilize the patients for assessment & to rule out distress.

At follow-up after 3 months, 3 patients had died. Two patients refused to participate; all other survivors were seen (n=95). After 6 months, another 2 patients had died. Two patients had a recurrent stroke

and were excluded, all others were seen (n=91). One year after the stroke, 2 more patients had died. All survivors were seen except 1 patient who had moved out of the region (n=88). Every time all the patients were assessed on BDI, [9] HAMA & MMSE. Data so collected were displayed in tabulated form and were analyzed using suitable statistical analysis and conclusions were drawn.

The major methodological difficulties were relating to diagnosis of psychiatric disorders in post stroke patients because of overlapping of symptoms. For example, we found that anxiety disorders were not possible to assess with any accuracy in the acute stage after stroke because of substantial overlap with symptoms of physical illness, distress of having another stroke, of being unable to handle a situation because of disabilities, etc. These fears often were realistic, and we decided not to register them as agoraphobia or social phobia. These adjustment reactions need further study, especially in a longitudinal perspective. To overcome these problems we started our study after one month of stroke. For psychotic patients after stroke, in ICD 10 they are distributed according to hallucinations & delusions & we had a great difficulty in labeling patients according to that, so we labeled them as patients of organic psychosis (NOS).

Observations:

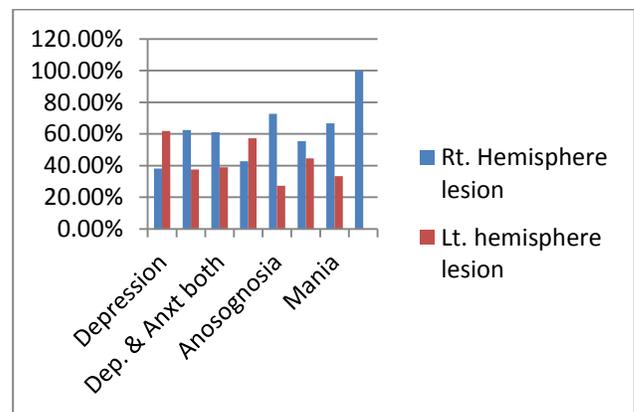
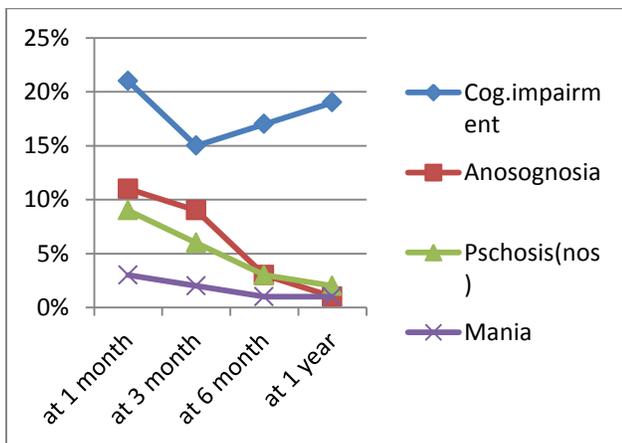
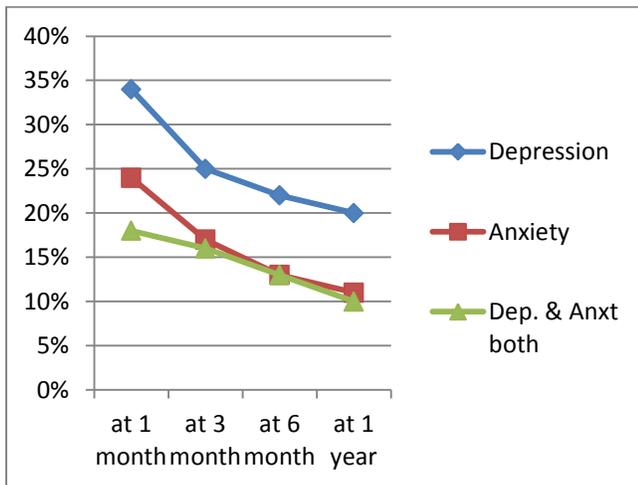
Table 1: Distribution of psychiatric disorders in post stroke patients

S.No.	Type of psychiatric morbidity	After 1 month of stroke (100)	After 3 months of stroke (95)	After 6 months of stroke (91)	After 1 year of stroke (88)
1	Depressive disorders	34(34%)	24(25%)	21(22%)	18(20%)
2	Anxiety Disorders	24(24%)	16(17%)	12(13%)	10(11%)
3	Both Depressive	18(18%)	15(16%)	12(13%)	9(10%)

	&Anxiety Disorders				
4	Cognitive impairment	21(21%)	16(17%)	14(15%)	17(19%)
5	Anosognosia	11(11%)	8(9%)	3(3%)	1(1%)
6	Psychosis (NOS)	9(9%)	6(6%)	3(3%)	2(2%)
7	Mania	3(3%)	2(2%)	1(1%)	1(1%)
8	Catastrophic reaction	2(2%)	-	-	-
9	Total psychiatric illnesses	49(49%)	32(33.6%)	28(29%)	25(28%)

Table 2: Psychiatric illness in post stroke patients according to right & left hemisphere lesion

S.No.	Type of psychiatric illness (After 1 month of stroke)	Right hemisphere lesion	Left hemisphere lesion
1	Depression(n=34)	13(38.2%)	21(61.8%)
2	Anxiety disorders(n=24)	15(62.5%)	9(37.25%)
3	Both Depression & Anxiety disorders(n=18)	11(61.1%)	7(38.9%)
4	Cognitive impairment(n=21)	9(42.8%)	12(57.2%)
5	Anosognosia (n=11)	8(72.7%)	3(27.3%)
6	Psychosis(n=9)	5(55.5%)	4(44.5%)
7	Mania(n=3)	2(66.6%)	1(33.3%)
8	Catastrophic reaction	2(100%)	-



Results and Discussion:

After 1 month of stroke, 49% of patients had neuropsychiatric illnesses. Depression was commonest psychiatric morbidity which was found in (34%) of patients followed by generalized anxiety disorder (24%), cognitive impairment (21%), anosognosia (11%), psychosis (9%), mania (3%) & 2% of the patients were found to be suffering from catastrophic reaction. After 3 months of stroke 33.6% of the patients had psychiatric illnesses, in which depression was found in 24(25%) of the patients, anxiety disorders were found in 16(17%) of the patients, both depression & anxiety disorders were found in 15(16%) of the patients, cognitive impairment in 16(17%) of patients, anosognosia, psychosis, mania found in 8(9%), 6(6%), 2(2%) of the patients respectively. At 6 months 28(29%) patients had psychiatric illnesses, of which 21(22%) had depression, anxiety disorders found in 12(13%) patients, 12(13%) patients had both depression & anxiety disorders, cognitive impairment in 14(15%) of the patients, anosognosia & psychosis 3% of the patients & one patient had manic symptoms.

After one year of stroke 25(28%) patients had some kind of neuropsychiatric illnesses of which 18(20%) had depression, 10(11%) suffered from anxiety disorders, both depressive & anxiety disorders were found in 9(10%) of the patients, while cognitive impairment was found in 17(19%) patients, one patient had anosognosia, 2 patients had psychosis & one patient had manic symptoms. Morris PL & et al (1992), found that 38% of post stroke patients had depression (major or minor).[10] Whereas Aström M et al (1993), reported the prevalence of major depression as 25% at the acute stage and approximately the same at 3 months (31%).[11] Robinson RG et al (1987), found that 14% of post stroke patients had symptom clusters of major depression, 18% had symptom clusters of dysthymic or minor depression, and 68% did not meet the DSM III diagnostic criteria for depression.[12] Thus in this regard our study is in line with most of the above studies.

About two third of the depressive patients (61.8%) had left hemisphere lesion whereas right hemisphere lesion was found in only 38.2% of depressive patients, opposite to that 62.5% of anxiety disorder patients had right hemisphere lesion & 37.25% had left hemisphere lesion, 61.1% of the patients who had both depression & anxiety disorders had right hemisphere lesion & 38.9% had left sided lesion, 57.2% of cognitive impaired patients had left hemisphere lesion, about three fourth (72.7%) of the patients suffering from anosognosia had right hemisphere lesion & 27.3% had left hemisphere lesion, 55.5% patients of psychosis had right hemisphere lesion whereas 44.5% had left hemisphere lesion, two third of patients suffered from Apathy & mania had right hemisphere lesion & one third of the patients had left hemisphere lesion. All the patients of catastrophic reaction had right sided lesion. [13] Robinson RG, Kubos KL & Starr LB et al (1984), found that the severity of depression was significantly increased in patients with left anterior lesions as opposed to any other lesion location. In addition, the severity of depression correlated significantly with proximity of the lesion on CT scan to the frontal pole in the left anterior group. The right hemisphere lesion group showed the reverse trend, patients with right posterior lesions were more depressed than patients with right anterior lesions, who were unduly cheerful and apathetic. [6] Aström M et al (1996) reported that at the acute stage after stroke, GAD plus depression was associated with left hemispheric lesion, whereas anxiety alone was associated with right hemispheric lesion. Cerebral atrophy was associated with both depression and anxiety disorder late but not early after stroke. [14] Starkstein SE & Berthier ML et al (1990), reported 2 patients who developed a neglect syndrome, anosognosia, and major depression immediately after a right hemisphere cerebrovascular lesion. [15] [16]

Conclusion:

This prospective study demonstrates the high prevalence of neuropsychiatric disorders after stroke. The prevalence remained high throughout the 1 year of follow-up. The longitudinal courses of neuropsychiatric disorders after stroke have not been demonstrated previously in India. Co morbidity with depression was high at all time points and seemed to impair the prognosis of depression.

Psychiatric illnesses were found in about half of the patients; reason may be injury to the brain, stress, disability or any other. Depression was the most common psychiatric illness which was found in one third of the patients, followed by anxiety disorders (1/4th of patients) & cognitive impairment (1/5th). During follow up at 3 months depression subsided to 1/4th of the patients & remained almost same at 6 months & 1 year. Anxiety disorders also followed the same course & recovery was poor in patients who suffered from both depressive & anxiety disorders. Number of patients having cognitive impairment decreased at 3 & 6 months follow up but again increased at one year, reason may be atrophy in brain with time.

Depressive disorders were more in patients who had left hemisphere lesion, opposite to that of anxiety disorder patients in which right hemisphere lesion was more common, but patients who had both depression & anxiety disorders had right hemisphere lesion, psychosis & cognitive impairment were more common in left hemisphere lesion than right, while patients suffering from anosognosia & mania had right hemisphere lesion. Both the patients of catastrophic reaction had right sided lesion. Our study highlights the need for early detection & treatment of depression & other psychiatric illnesses in stroke patients as there is significant difference in the morbidity & mortality who have associated psychiatric illness. More extensive research work & interventional studies are emphasized by our study.

References:

1. Hughlings-Jackson J. On affections of speech from disease of brain. *Brain* 1915;38:106-174.
2. Meyer A. The anatomical factors and clinical varieties of traumatic insanity. *Am J Insanity* 1904;60:373-442.
3. King RB: Quality of life after stroke. *Stroke* 1996; 27:1467-1472
4. Clark MS, Smith DS: Abnormal illness behavior in rehabilitation from stroke. *Clin Rehabil* 1997; 11:162-170
5. Eastwood MR, Rifat SL, Nobbs H: Mood disorder following cerebrovascular accident. *Br J Psychiatry* 1989; 154:195-200
6. Robinson RG, Kubos KL, Starr LB, Rao K, Price TR. Mood disorders in stroke patients. Importance of location of lesion. *Brain*. 1984 Mar;107(Pt 1):81-93.
7. Aström M, Adolfsson R, Asplund K: Major depression in stroke patients: a 3-year longitudinal study. *Stroke* 1993; 24:976-982
8. House A, Dennis M, Warlow C, et al: Mood disorders after stroke and their relation to lesion location. *Brain* 1990; 20:815-828
9. Beck AT, Steer R: *Manual for the Beck Depression Inventory*, San Antonio, TX, Psychological Corporation, 1987
10. Morris PLP, Robinson RG, Raphael B, et al: The relationship between risk factors for affective disorder and post-stroke depression in hospitalized stroke patients. *Aust NZ J Psychiatry* 1992; 26:208-217
11. Aström M, Adolfsson R, Asplund K: Major depression in stroke patients: a 3-year longitudinal study. *Stroke* 1993; 24:976-982
12. Robinson RG, Bolduc PL, Price TC: Two-year longitudinal study of post-stroke mood disorders: diagnosis and outcome at one and two years. *Stroke* 1987; 18:837-843
13. Morris PLP, Robinson RG, Raphael B, et al: Lesion location and post-stroke depression. *J Neuropsychiatry Clin Neurosci* 1996; 8:399-403
14. Aström M: Generalized anxiety disorder in stroke patients: a 3-year longitudinal study. *Stroke* 1996; 27:270-275
15. Starkstein SE, Berthier ML, Fedoroff P, Price TR, Robinson RG. Anosognosia and major depression in 2 patients with cerebrovascular lesions. *Neurology*. 1990;40(9):1380-1382.
16. Starkstein SE, Robinson RG, Honig MA, et al: Mood changes after right-hemisphere lesions. *Br J Psychiatry* 1989; 155:79-85.