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Association of Depression with Cerebrovascular Accidents (CVA)

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I. Introduction

Cerebral stroke after heart disease and cancer is the third commonest cause of death . The term cerebro vascular disease designates any abnormality of the brain resulting from a pathologic process of the blood vessels(1) .

The disability resulting from cerebral strokes is frequently an admixture of physical & mental problems . The latter may be attributed directly to the brain damage sustained and individual's reaction to the handicaps imposed on him .The present attempt is to evaluate some of the psychological aspects associated with cerebral strokes

Post-stroke depression (PSD) is considered as the most frequent andimportant neuropsychiatric consequence of stroke, since approximately one-thirdof stroke survivors experience major depression. The Diagnostic and Statistical Manual (DSM) IV categorizes post-stroke depression as "mood disorder due to a general medical condition (i.e. stroke)" with the specifies of depressive features, major depressive-like episodes, manicfeatures, or mixed features.

Utilizing patient data from acute hospital admission,community surveys, or out- patient clinics previous studies have identified two types of depressive disorders associated with cerebral ischemia: (2)

Major depression, which occurs in up to 25% of patients; and Minor depression, which occurs 30% of patients following study major depression defined for research purposes by DSM-IV criteria as a depressed mood or loss of interest and at least four symptoms of major depression and minor depression defined for research purposes by DSM-IV criteria as a depressed mood or loss of interest and at least two symptoms following stroke. Prevalence clearly varies over time with an apparent peak 3-6 months after stroke and subsequent decline in prevalence at one-year reaches about to 50% of initial rates. Robinson and colleagues characterized the natural course of major depression after stroke with spontaneous remission typically 1 to2 years after stroke However, it was also noted that in few cases depression becomes chronic and may persist for more than 3 years following stroke .

The prevalence of post-stroke depression was high, more than half of the ischemic stroke patients having depression at the 3-month follow-up visit and almost half of them at the 12-month visit. The results also showed that the proportion of patients suffering from major depression increased from 9% to 16% during the follow-up.

In other studies using psychiatric examinations indiagnosing depression, the prevalence of PSD has varied from 24% to 41%, major depression occurring in 12-31% of patients and minor depression in 9-29% of patients, depending on the time elapsed after stroke (Åströmet al. 1993, Burvillet al. 1996, Pohjasvaaraet al. 1998). (3-5)

Robinson et al. (1987) found a stable 14% prevalence of depression up to 2 years in a subsample of their original group. In the study of Åströmet al. (1993) the majority of patients with depression experienced remission within the first year, the prevalence of majordepression decreasing from 31% at 3 months to 16% at 12 months after thestroke. The occurrence of depression in the present series was even higher thanin most of the previous studies, but the prevalence of major depression was lower (Morris et al. 1992, Åström et al. 1993, Herrmannet al. 1998). (6-9)

Lesion Location

In one of their earlier studies Robinson et.al. noted left anterior lesions to be associated with greater severity of depression. In a subsequent study lapse et. al. found strong association between lesions And depression even in patients with bilateral lesions .

More recent studies By Robinson group have also found strong association between left frontal or basal ganglion lesions and depression .

In their study House et al.found association between left sided lesions and Post Stroke Depression (PSD). In a similar study in 1988 Stark stein et al. found depression more common in basal ganglion lesions as compared to thalamic regions on either side . (10-13)

II. Materials And Methods

The study was conducted between July 2009 to July 2010 at neurology and medicine dept. of Andhra Medical college, Visakhapatnam, Andhrapradesh. In this cross-sectional studystable outpatient and inpatient with cerebrovascular accident (CVA). The primary outcome measure was post stroke depression and relation to lesion site. It was hypothesized that depression more common in stroke patients and more severity in lift sided lesions. A sample of 60 participants were 25 to 80 years old and who had an attack of cerebro vascular accident diagnosed by neurologist both clinically and with CT scan and the patient should have been conscious and co-operative and the duration of illness were included minimum of 1 week to maximum of one year.Each patient after being screened was examined in detail and data recorded On an intake proforma . These consisted of socio demo graphic data, history of present illness, history Of past medical and psychiatric illness and detailed neurological examination. C. T scans findings and other important investigations.

The following tools were administered after selection

Present State Examination (PSE): for diagnosis of depression.

Hamilton Depression Rating Scale: for severity of depression

Socio-Demographic Data

S. No	Age	Frequencies	Percent
1	25 – 30	2	3.3
2	31 – 35	2	3.3
3	36 – 40	7	11.9
4	41 – 45	10	16.8
5	46 – 50	15	24.4
6	51 – 55	10	16.8
7	56 – 60	8	13.5
8	61 – 65	2	3.3
9	66 – 70	2	3.3
10	71 – 80	1	1.7
11	81 – 90	1	1.7
	Total	60	100.0

Present Illiness

S. No	Side of lesion	type of lesion	Frequencies	Percent
1	Lt	Hemi paresis	20	33.3
2	Lt	Hemiplegia	6	10.0
3	Rt	Hemi paresis	19	31.7
4	Rt	Hemiplegia	7	11.7
5	Lt	Facio Brachial Mono paresis	1	1.7
6	Rt	Facio Brachial Mono paresis	2	3.3
7		Others	5	8.3
		Total	60	100.0

III. Results

A profile of socio demographic data shows that predominant age group affected is between 40 and 55 years with males being twice as compare to females.

Right – Left Hemispheric Comparison.

The two groups are almost equally comparable in age. Sex and duration of illness. The diagnosis is predominantly. Hemispheric with frequent involvement of 7th cranial nerve UMN type in both groups .There is no significant difference between 2 groups in higher mental function deficits. On Hamilton depression score at a cut off point of 10 the difference in the frequency of depression is not statistically significant in both groups.

C.T – Scan Lesion Location – Right And Left

S. No		RT. HEMISPHERE	LT. HEMISPHERE
		Frequencies	Frequencies
1	FRONTAL	0 (0%)	0 (0%)
2	FRONTO- PARIETAL	3 (13.6%)	2 (7.1%)
3	PARIETAL	2 (9.1%)	3 (10.7%)
4	TEMPORO PARIETAL	1 (4.5%)	1 (3.6%)
5	TEMPORAL	1 (4.5%)	1 (3.6%)
6	OCCIPITAL	2 (9.1%)	2 (7.1%)
7	PARAVENTRICULAR	2 (9.1%)	3 (10.7%)
8	STRIATO CAPSULAR	1 (4.5%)	4 (14.3%)

9	MIDDLE CERBRAL ART. TERRITORY	6 (27.3%)	4 (14.3%)
10	MULTIPLE INFARCIS	1 (4.5%)	1 (3.6%)
11	INT. CAPSULAR	3 (13.6%)	6 (21.4%)
12	THALAMIC	--	1 (3.6%)
T0TAL		22	28

Hemispheric Comparison on Duration of Illness

Both PSE and Hamilton scores are significantly high in left hemisphere lesions over 1 month, 6 months and 12 months. Relationship between DSM IV R diagnosis of depression and side of lesion on CT scan.
Left hemispheric lesions fit in to DSM IV R criteria for depressive illness, twice more than normal scan and 4 times more than right hemispheric lesions. In left hemispheric lesions diagnosis of major depression can be made more commonly than depression nos. Major depression is commonest at 6 months duration of illness.

Lesion Location and Major Depression:

Left hemispheric Antroposterior and intermediate lesions have major depression more commonly depression more commonly than right hemisphere at one month duration of illness.

Rt & Lt Hemispheric Comparisons Of Lesion Location & Hdrs Scales (Cut Off 10)

S. No		RT. HEMISPHERE HDRS SCORS NO=12		LT. HEMISPHERE HDRS SCORS NO=14	
		Frequencies	Percent	Frequencies	Percent
1	FRONTAL	0 (0%)		0 (0%)	
2	FR- PAR	1 (8.33%)		1 (7.14%)	
3	PARIETAL	1 (8.33%)		1 (7.14%)	
4	TEMP – PAR	1 (8.33%)		1 (7.14%)	
5	TEMP	0 (0%)		0 (0%)	
6	OCCIPITAL	0 (0%)		0 (0%)	
7	PARAVENTR	2 (16.7%)		1 (7.14%)	
8	STRIATO CAPSULAR	3 (25.0%)		4 (28.6%)	
9	MIDDLE CERBRAL ART. TERRITORY	2 (16.7%)		3 (21.4%)	
10	MULTIPLE INFARCIS	0 (0%)		0 (0%)	
11	INT. CAPSULAR	2 (16.7%)		3 (21.4%)	
12	THALAMIC	0 (0%)		0 (0%)	
13	Total	12 (100.0%)		14 (100.0%)	

IV. Discussion

This study is a replicative study on post stroke depression. The sample of 60 patients is almost equally represented by right and left sided stroke.41 % (Number. 24) of the studied sample suffers from mild to moderate depression. This finding is in line with finings of other studies like Robinson etal which found prevalence of depression to be between 30 % and 60 %.Of the 41%, 24% (Number.14) met the criteria for major depression according to DSM IV R criteria and 17 % (Number. 10) met the criteria for dysthymic disorder.In Robinson et.al.study, the prevalence of major depression following stroke was 23% and that for dysthymic disorder was 20 % the present study compares favorably with Robinsons study on types of depression following stroke.

Total Number of Individuals on HDRS Scale Cut off point '10'

S. No	HDRS Scale	Frequencies	Per cent
2	>10	34	56.7
3	<10	26	43.3
	Total	60	100.0

43 % of the total sample shows at least mild to moderate depression on HDRS Scale.

Laterality:

The present study found no significant association between frequency of depression and left hemispheric stroke. This finding contrasts with Robinson et. al ,study which found depression to be significantly associated with left hemispheric stroke , But compares favorably with the study by Ebrahimetal and house etal who found no association between left hemispheric stroke and frequency of depression.

In this study severity of depression is found to be associated with left hemispheric stoke and major depression is 4 times more common with left hemispheric stroke as compared to right hemispheric stroke. Severity of depression compared at different times, 1 month, 6 months & 12 months is more with left hemisphere is stroke. This has also been the finding in studies by Robinson et. al.

Relationship Between Dsm- Iv-Tr Diagnosis And Side Of Lesion On C.T-Scan

DSM – IV – TR	RT. HEMIS LESION N = 3	LT.HEMISPH LESION N = 12	NORMAL SCAN N = 6s
1 MONTH			
MAJOR DEPR	1	3	
OTHER (DEPR. NOS.)	--	2	2
6 MONTHS			
MAJOR DEPR	--	5	2
OTHER (DEPR. NOS.)	--	1	--
12 MONTHS			
MAJOR DEPR	--	1	1
OTHER (DEPR. NOS.)	2	--	1

Left hemispheric lesions fit into DSM – IV-TR criteria for depressive illness twice more than normal scans and 4-times more than Rt hemisphere lesion.
Diagnosis of major depression can be made in left hemispheric lesions more than depression Nos.
Major depression is commonest '5' in Left hemispheric lesions at 6 months duration of illness.

Methodological Problems Encountered During The Study

It is difficult to diagnose depression in the first few days after stoke as diagnosis is hampered by physical disability and cognitive deficits like aphasia. In fact diagnosing depression as a problem continued in aphasics. The diagnostic criteria for major depression have limitations in diagnosing post stroke depression.

The relationship between cognitive deficits and depression is difficult to study. Post stroke depression could be studied better if these limitations could be over come.

The study emphasized the need for prospective studies on PSD with stratification of sample based on lesion location

Summary

Depression is the most common and well recognized psychiatric disturbance following stroke. Depression in stroke patients affects both cognitive status and rehabilitation in stroke patients. Also depression following stroke is known to respond well to treatment.

A review of literature on prevalence, clinical features and associated factors like sociodemographic factors, physical & cognitive deficits, laterality & lesion location & course have been presented. Further aspects like impact of PSD on mutation and rehabilitation response to treatment have been addressed in review of literature. The present study is on post stroke depression and facts with which it is associated.

A sample of 60 strokes patients between the ages of 28 and 81 years were selected for the study at Andhra Medical College Visakhapatanam, They were screened using the intake proforma and the following scales were applied Disability assessment scale. PSE, HDRS and CT SCAN. The resulting data was analyzed using percentage analysis, chi - squre test, T test, one way ANOVA, Multiple recession analysis.

The study favourably compared with other studies on prevalence and clinical features of post stoke depression and identified some factors associated with it.A conclusion of results and discussion is presented herewith limitations of the present study and need for major future studies with large sample sizes better design and better validated instruments have been pointed at .

V. Conclusion

This study confirms PSD as the most common and significant psychiatric disturbance following stroke. It makes a brief study of clinical features and addresses problems encountered in diagnosing PSD. It studies some of the factors associated with PSD, and comes to the conclusion that structural lesion as the cause of some cases of PSD needs to be further researched.

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