Assessing Pre Stroke and Post Depression in aging population with acute cerebrovascular disease.

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Aim: although different opinions exist about the definition, diagnosis, and measurement of outcomes related to depression after stroke, there is little debate about the prevalence of depression symptoms and their impact on stroke survivors. The presence of post-stroke depression has been associated with decreases in functional recovery, social activity and cognition. Aim of the study is to evaluate the presence of premorbid depression and to evaluate the impairment due to acute cerebrovascular events.

Material: Premorbid clinical and cognitive features of 158 consecutively recruited patients with a diagnosis of acute cerebrovascular pathology (ischemic or haemorrhagic stroke) were assessed interviewing the caregivers with multidimensional assessment. Depression was evaluated at follow up using Geriatric Depression Scale (GDS). **Methods:** Patients were divided into two groups (Pre Stroke Depression group, and Non Pre Stroke Depression group). Baseline cognitive, functional, behavioral variables and neuroradiological hallmarks (Medial Temporal Lobe Atrophy-MTLA) have been compared between these two groups. Worsening of depressive mood was assessed at 3 month and at one year follow up.

Results: Pre stroke depression patients were older, less educated and more compromised in premorbid functional abilities than Non Pre Stroke depression subjects. Pre stroke depression group showed a greater burden of behavioural disturbances than Non Pre Stroke depression group. At the CT scan, MTLA was more pronounced in subjects with Pre stroke depression than in subjects with Non Pre Stroke depression. In a logistic regression model older age, (OR 1,05), female gender (OR 2,3), NPI total (OR 1,1) and MTLA (OR 1,2) were the variables independently associated with pre stroke depression. Depression become worsen in patients with stroke with no statistical difference between the groups.

Table 1. Baseline socio-demographic and clinical characteristics of patients grouped by diagnosis of Post Stroke Dementia (PSD) and Post Stroke non Dementia (PSND) three month (n= 145) and one year (n= 132) after a cerebrovascular event.

| | T3 | | | | | | T12 | | | | | |
| | PSD n=42 | | | PSND n=102 | | | PSD n= 43 | | | PSND n=89 | | |
	Mean	SD	(N)%	Mean	SD	(N)%	p	Mean	SD	(N)%	Mean	SD	(N)%	p
Age, years	78,4	10,2		66,4	13,9		0,000	78,7	9,7		66,4	13,8		0,000
Female gender			23(54)			39(38)	NS			29(67)			43(48)	0,042
Education, years	5,6	2,9		7,8	3,4		0,001	5,9	2,2		7,6	3,3		0,003
Comorbidity; number of diseases	5,9	3,1		4,6	2,7		0,015	6,2	2,8		4,5	2,4		0,001
Number of drugs	4,9	3,5		3,6	2,9		0,021	5,6	3,0		3,2	2,8		0,000
Living at home with relatives			34(29)			83(71)	NS			39(91)			67(65)	0,039
IQcode score	3,4	0,5		3,1	0,2		0,000	3,3	0,4		3,1	052		0,018
IADL pre stroke	1,3	2,4		0,4	1,2		0,002	1,0	1,4		0,3	0,8		0,000
Barthel Index pre stroke	92,3	19,5		97,3	11,2		0,050	84,8	18,2		96,6	13,8		0,000
Familiarity for dementia			3(7)			11(11)	NS			4(9)			9(10)	NS

All the variables referring to previous stroke condition;
T3 = 3 month follow up; T12= 1 year follow up;
PSD = MMSE <24 and IADL>1 lost; PSND = MMSE>24 and IADL<1 lost;
Figures in parentheses represent percentage;
IADL = Instrumental Activities of Daily Living;
IQcode= Informant Questionnaire on Cognitive Decline in the Elderly;
NS= not significant.

Table 3. Premorbid neuropsychiatric disturbances of patients grouped by diagnosis of Post Stroke Dementia (PSD) and Post Stroke non Dementia (PSND) three month (n= 145) and one year (n= 132) after a cerebrovascular event.

| | T3 | | | | | | T12 | | | | | |
| | PSD n=42 | | | PSND n=102 | | | PSD n= 43 | | | PSND n=89 | | |
	Mean	SD	(N)%	Mean	SD	(N)%	p	Mean	SD	(N)%	Mean	SD	(N)%	p
Delusion	0,4	1,5		0,1	0,9		NS	0,1	0,2		0,3	1,4		NS
Hallucination	0,1	0,7		0,6	0,6		NS	0,0	0,0		0,1	0,7		NS
Agitation	0,4	1,2		0,4	1,1		NS	0,4	1,0		0,4	1,2		NS
Depression	1,6	1,8		1,0	2,0		NS	1,6	1,7		1,3	2,1		NS
Anxiety	1,9	2,3		1,7	2,3		NS	1,7	2,0		1,9	2,4		NS
Euphoria	0,0	0,0		0,1	0,4		NS	0,0	0,0		0,1	0,4		NS
Apathy	1,0	1,8		0,3	0,9		0,002	1,9	2,5		0,5	0,3		0,000
Disinhibition	0,1	0,4		0,2	0,9		NS	0,1	0,4		0,2	0,9		NS
Irritability	1,2	1,8		0,9	1,7		NS	0,9	1,4		1,1	1,9		NS
Wandering	0,3	0,9		0,9	0,5		NS	0,2	0,7		0,1	0,6		NS
Sleep disorders	0,8	1,4		0,9	1,6		NS	0,7	1,1		1,0	1,8		NS
Eating disorders	0,5	1,0		0,3	1,1		NS	0,6	1,1		0,3	1,1		NS
NPI total score	8,3	7,7		6,2	8,0		0,001	7,9	5,9		4,5	3,6		0,000

Variables referring to pre stroke and follow up condition.
T3 = 3 month follow up; T12= 1 year follow up;
PSD = MMSE <24 and IADL>1 lost; PSND = MMSE>24 and IADL<1 lost;
Figures in parentheses represent percentage.
NPI = Neuro Psychiatric Inventory
NS: Not Significant

Table 4. Three month neuropsychiatric disturbances of patients grouped by diagnosis of Post Stroke Dementia (PSD) and Post Stroke non Dementia (PSND) three month (n= 145) and one year (n= 132) after a cerebrovascular event.

| | T3 | | | | | | T12 | | | | | |
| | PSD n=42 | | | PSND n=102 | | | PSD n= 43 | | | PSND n=89 | | |
	Mean	SD	(N)%	Mean	SD	(N)%	p	Mean	SD	(N)%	Mean	SD	(N)%	p
Delusion	0,4	1,5		0,2	0,9		NS	0,1	0,1		0,3	1,3		NS
Hallucination	0,9	0,6		0,1	0,6		NS	0,0	0,0		0,1	0,7		NS
Agitation	0,7	1,5		0,5	1,4		NS	0,5	1,3		0,4	1,5		NS
Depression	2,5	1,7		2,2	1,3		NS	1,8	2,3		1,3	2,6		NS
Anxiety	2,4	2,5		1,7	2,4		NS	2,0	2,1		1,9	2,6		NS
Euphoria	0,1	0,3		0,1	0,6		NS	0,2	0,2		0,1	0,7		NS
Apathy	2,1	2,5		0,5	1,3		0,000	1,4	1,6		0,5	1,2		0,000
Disinhibition	0,4	1,3		0,2	0,9		NS	0,2	0,7		0,2	1,2		NS
Irritability	1,6	1,8		1,4	2,3		NS	1,5	1,9		1,1	2,2		NS
Wandering	0,4	1,2		0,1	0,5		NS	0,2	0,8		0,1	0,8		NS
Sleep disorders	1,2	1,7		0,9	1,6		NS	0,8	1,5		1,0	1,8		NS
Eating disorders	0,7	1,3		0,6	1,3		NS	0,5	1,2		0,3	1,3		NS
NPI total score	13,0	10,1		7,5	8,4		0,001	8,7	7,2		4,5	6,2		0,001

Table 6. Neuroradiological characteristics evaluated by CT scan of patients grouped by diagnosis of Post Stroke Dementia (PSD) and Post Stroke non Dementia (PSND) three month (n= 145) and one year (n= 132) after a cerebrovascular event.

| | T3 | | | | | | T12 | | | | | |
| | PSD n=42 | | | PSND n=102 | | | PSD n= 43 | | | PSND n=89 | | |
	Mean	SD	(N)%	Mean	SD	(N)%	p	Mean	SD	(N)%	Mean	SD	(N)%	p
MTL width, mm	8,8	3,4		10,6	2,9		0,002	9,1	2,7		11,0	3,3		0,002
Leukaraiosis			16(37)			20(20)	0,025			9(21)			25(28)	NS

All the variables referring to acute stroke condition.
Figures in parentheses represent percentage.
T3 = 3 month follow up; T12= 1 year follow up;
PSD = MMSE <24 and IADL>1 lost; PSND = MMSE>24 and IADL<1 lost;
MTL = Medial Temporal Lobe considered as thinkness not over 11.5 found in 2mm contiguous slice of CT scan.
NS: Not Significant

• **Discussion**: High levels of depressive symptoms are common in the chronic phase post-stroke and were partially related to cognition, MTLA, and behavioural disturbances.

• **Conclusion**: A holistic perspective of disease and lifestyle factors should be considered while assessing risk of depressive symptoms in stroke patients. Patients at risk for depressive symptoms should be monitored at subsequent outpatient visits.

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