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Affective Disturbance in Mild Cognitive Impairment

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Abstract

Mild cognitive impairment (MCI) is an identifiable, prodromal stage of cognitive impairment and has been further defined into subtypes: amnesic, language, executive functioning, and multi-domain/mixed MCI (Jak et al. 2009). The purpose of this study is to (1) examine the differences in depression, anxiety, and apathy between MCI subtypes; and (2) assess the relationship between the neurocognitive domains (executive functioning, language, and memory) and affective symptoms. We hypothesize that apathy will be greater in dysexecutive/mixed MCI (dys/mixed MCI) and be more highly correlated to neurocognitive deficits compared to depression or anxiety. This is a retrospective study of 113 patients from the New Jersey Institute for Successful Aging Memory Assessment Program (MAP). Affective symptoms of depression, anxiety, and apathy were assessed by caregiver report using the Neuropsychiatric Inventory (NPI). Anxiety was found to be higher in the aMCI group compared to the other two groups but did not show a significant relationship with memory on cognitive testing. Only apathy was related to deficits in the executive function cognitive domain and in processing speed. The findings suggest that evidence of these affective disturbances in a clinical setting warrants assessment of cognitive function.

Background

- Mild cognitive impairment (MCI) is an identifiable, prodromal stage of cognitive impairment (1, 2, 3).
- MCI has been further defined into subtypes: amnesic, language, executive functioning, and multi-domain/mixed MCI (4, 5).
- The prevalence of neuropsychiatric and behavioral symptoms in MCI has been found to range between 35-85% (6, 7)
- Previous papers have looked at affective disturbance in those with an individual subtype of MCI but not the differences between those with different subtypes.
- Differences in affective disturbances identified in the clinical setting may help differentiate the MCI subtypes.

Objectives

- The purpose of this study is to:
 - (1) examine the differences in depression, anxiety, and apathy between MCI subtypes
 - (2) assess the relationship between the neurocognitive domains (executive functioning, language, and memory) and affective symptoms.
- We hypothesize that apathy will be greater in dysexecutive/mixed MCI (dys/mixed MCI) and be more highly correlated to neurocognitive deficits compared to depression or anxiety.

Methods

- Retrospective study of 113 patients from the New Jersey Institute for Successful Aging Memory Assessment Program (MAP).
- Inclusion - subjective cognitive complaints and/or evidence of cognitive impairment relative to age and education.
- Exclusions - any history of head injury, substance abuse, or major psychiatric disorders; also any meeting criteria for dementia.
- Affective symptoms of depression, anxiety, and apathy were assessed by caregiver report using the Neuropsychiatric Inventory.
- Age, gender, education, and IADLs were all obtained.
- Neuropsychological test performance categorized patients as presenting with non-MCI (patients that do not meet MCI criteria), amnesic MCI (aMCI), or a combined dys/mixed MCI (4, 5).
- Non-MCI, aMCI, and dys/mixed MCI were compared on affective symptoms using one-way ANOVA; step-wise multiple regression was used to examine the relationship between affective disturbances and each of the three cognitive domains.

Results

Table - 1 Demographics by Group

		N	Mean	SD	F	P Value
Age	Non-MCI	57	76.05	7.23		
	aMCI	25	74.16	6.39		
	Dys/mixed MCI	31	76.29	6.54		
	Total	113	75.70	6.86	.82	.444
Gender	Non-MCI	57	1.63	.49		
	aMCI	25	1.72	.46		
	Dys/mixed MCI	31	1.74	.44		
	Total	113	1.68	.47	.66	.517
Education	Non-MCI	57	15.00	2.76		
	aMCI	25	14.64	2.61		
	Dys/mixed MCI	31	14.13	2.79		
	Total	113	14.68	2.73	1.02	.364
IADL	Non-MCI	49	15.18	2.24		
	aMCI	23	14.09	3.13		
	Dys/mixed MCI	27	14.07	2.70		
	Total	99	14.63	2.63	2.24	.112

Table – 2 Affective Symptoms by Group

		N	Mean	SD	F	P Value
Depression	Non-MCI	49	1.04	1.43		
	aMCI	24	1.07	1.75		
	Dys/mixed MCI	27	.87	1.32		
	Total	100	1.00	1.47	.14	.869
Anxiety	Non-MCI	49	.60	1.08		
	aMCI	24	2.30	3.36		
	Dys/mixed MCI	27	.86	1.36		
	Total	100	1.08	2.04	6.47	.002
Apathy	Non-MCI	49	.97	1.65		
	aMCI	24	1.69	2.80		
	Dys/mixed MCI	27	1.29	2.03		
	Total	100	1.23	2.07	.98	.378

Table – 3 Relationship between Affective Symptoms and Cognitive Domains

	Executive Function			Processing Speed		
	Beta	t	P-value	Beta	t	P-value
Apathy	-.243	-2.466	.015	-.352	-3.728	.000
(Constant)		-3.751	.000		-1.493	.139

- Step-wise multiple regressions were calculated for memory and language; however, none of the affective disturbance measures were significantly correlated to those cognitive domains.

Discussion and Conclusions

- No differences were found between MCI groups with respect to age, gender, education, or IADLs.
- There were no differences in depression or apathy between the two groups. Post Hoc analysis showed that anxiety was higher in the aMCI group than each of the other two groups and that there was no difference between the Non-MCI and Dys/mixed MCI groups.
- In step-wise regression analyses, apathy was related to deficits in executive function and processing speed.
- The findings suggest that evidence of these affective disturbances in a clinical setting warrants assessment of cognitive function.

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