

Developing topics

The presence of moderate extrapyramidal signs predicts poorer outcomes in a community-based cohort of multi-ethnic demented elders

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Abstract

Background: Extrapyramidal signs (EPS) are a common feature of Alzheimer's Disease (AD) associated with worse outcomes in observational studies of dementia. Prior studies have been primarily conducted in predominately white, clinic-based samples. Less is known regarding the role of EPS in the disease course of dementia in ethnic minority and non-clinic-based populations.

Method: Predictors 3 (P3) is a multi-ethnic community-based cohort study of dementia. Recruitment began in 2011 and is ongoing. Participants are evaluated annually by trained investigators. 142 P3 participants with a baseline diagnosis of probable dementia were selected for this study. Moderate EPS was defined as a score of 2 or more on selected items from the Unified Parkinson's Disease Rating Scale. The cognitive endpoint was defined as a score of ≤ 10 on the Folstein MMSE, the functional endpoint as a score of ≥ 10 on the 17-point Blessed Dementia Rating Scale, and the institutional equivalent endpoint as need for equivalent to nursing home care. Adjusted Cox models were fitted for time to death and cognitive, functional, and institutional equivalent endpoints with baseline moderate EPS as predictor. Effect modification was assessed by fitting cross-product terms for moderate EPS by ethnicity, sex, age, education, and APOE polymorphism.

Result: Mean follow-up time was 3.61 years (range: 0.29 - 7.50, SD = 1.95). 33 participants (23.2%) had moderate EPS at baseline. 53 died (37.3%), 23 (17.2%) reached the cognitive endpoint, 45 (36.3%) the functional endpoint, and 44 (37.9%) the institutional equivalent endpoint post-baseline. Moderate EPS at baseline was significantly associated with an increased hazard of death (HR = 2.57, 95% CI = 1.30, 5.10) and of reaching the functional endpoint (5.59, 95% CI = 2.36, 13.27). Associations between moderate EPS and the cognitive and institutional equivalent endpoints were not statistically significant. No evidence was found for effect modification of associations on either additive or multiplicative scales.

Conclusion: In a multi-ethnic community-dwelling cohort of demented elders, we found that baseline moderate EPS significantly predicted time to death and time to functional endpoint, but not time to cognitive and institutional equivalent care endpoints. These findings confirm those of previous studies conducted on predominately white, clinic-based samples.

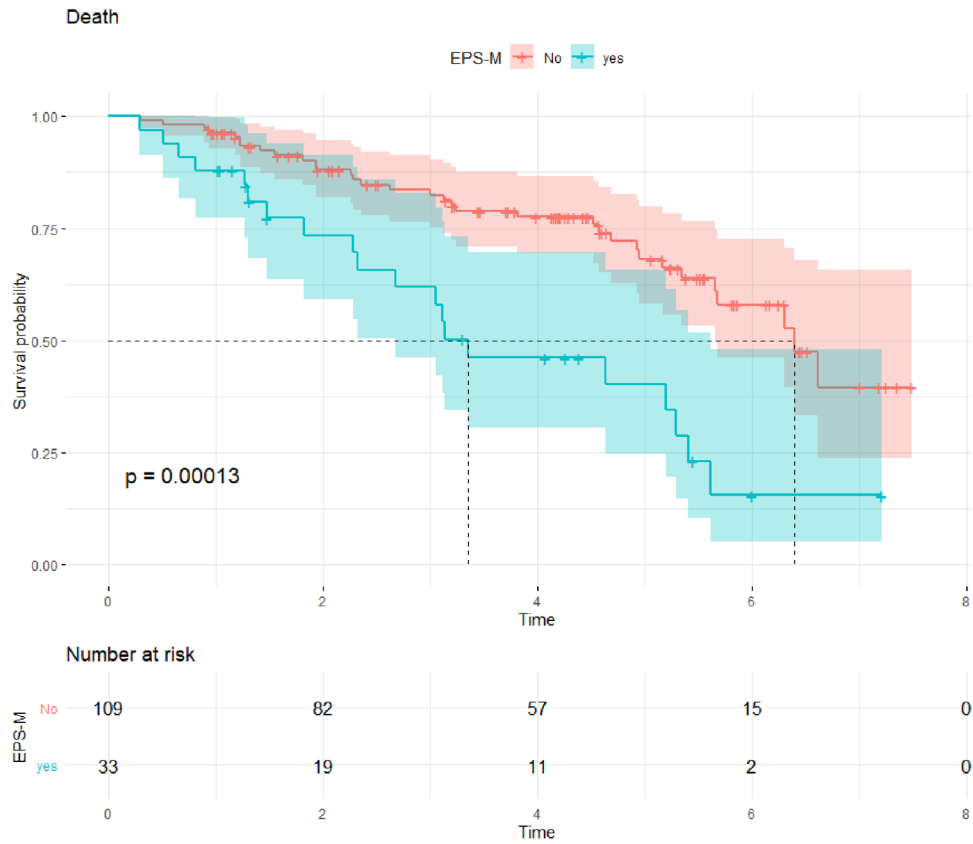


FIGURE 1

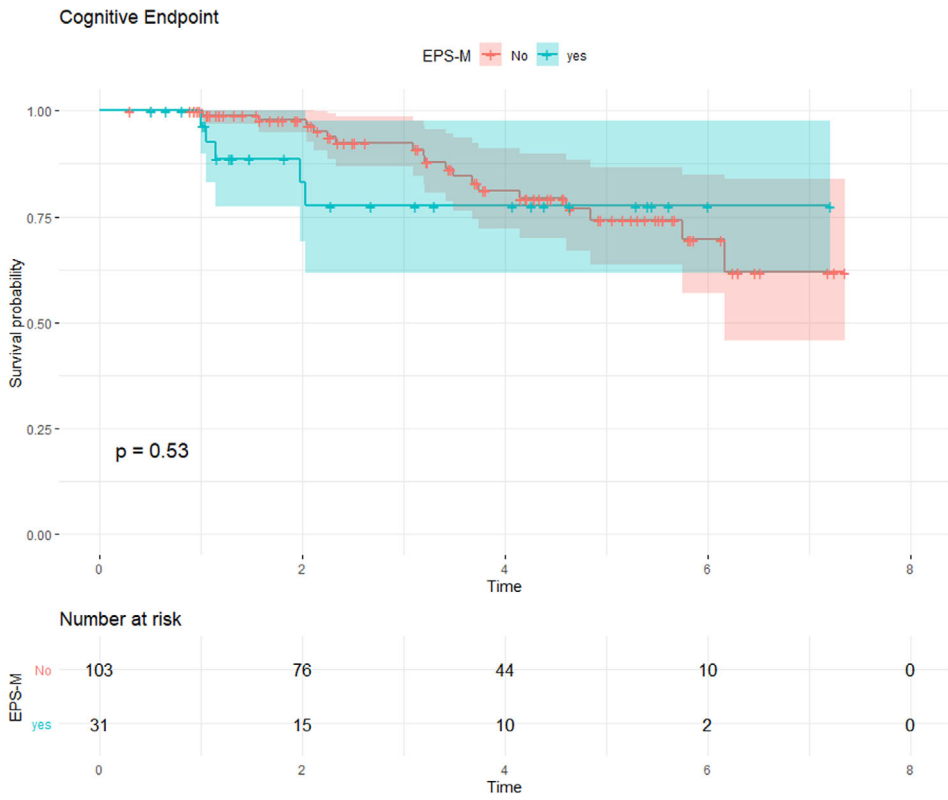


FIGURE 2

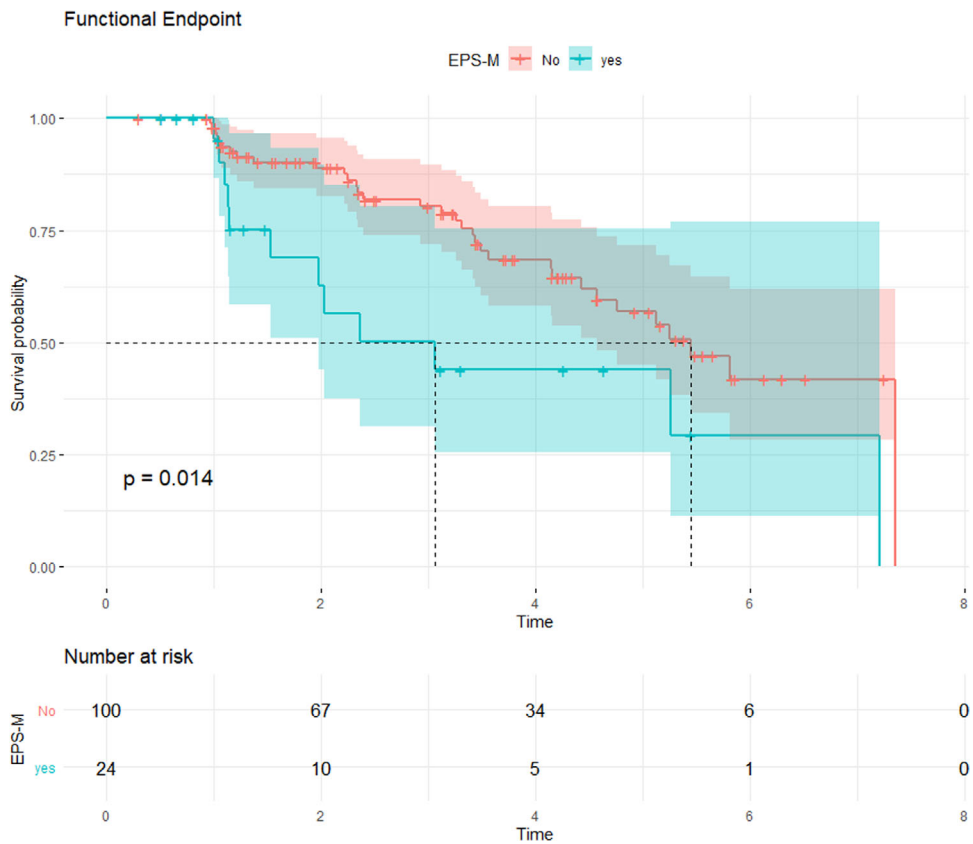


FIGURE 3

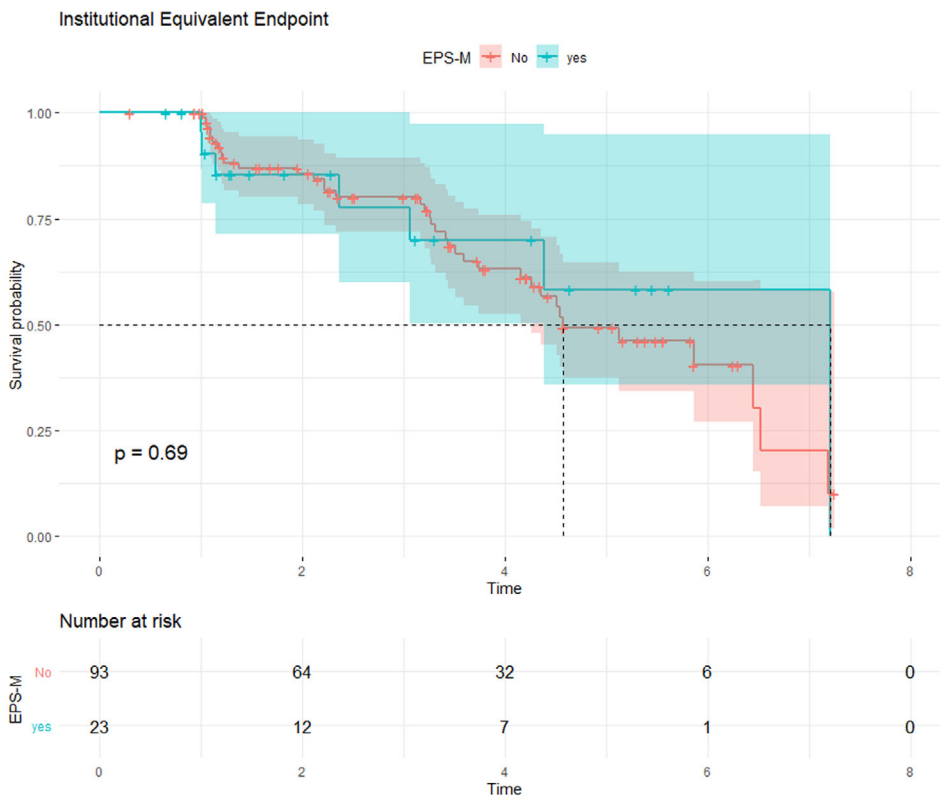


FIGURE 4

TABLE 1

	[ALL] N=142	No N=109	Yes N=33	p.overall
Died	53 (37.3%)	33 (30.3%)	20 (60.6%)	0.003
Follow-up (years)	3.76 [1.78;5.28]	4.18 [2.06;5.39]	2.67 [1.28;4.38]	0.019
Survival (death)	28.6%	21.1%	53.9%	<0.001
Age at P3 Enrollment	85.2 (6.54)	85.1 (7.01)	85.5 (4.72)	0.645
Race:				0.047
White	7 (4.93%)	5 (4.59%)	2 (6.06%)	
Black	18 (12.7%)	10 (9.17%)	8 (24.2%)	
Hisp	117 (82.4%)	94 (86.2%)	23 (69.7%)	
Hispanic	117 (82.4%)	94 (86.2%)	23 (69.7%)	0.054
Sex=Male	28 (19.7%)	19 (17.4%)	9 (27.3%)	0.320
Education (Years)	6.00 [4.00;11.0]	6.00 [4.00;10.0]	9.00 [5.00;13.0]	0.050
Baseline MMSE (30)	18.1 (4.67)	18.0 (4.74)	18.3 (4.51)	0.737
MMSE (30) <=10	8 (5.63%)	6 (5.50%)	2 (6.06%)	1.000
Reached Cognitive Outcome	31 (21.8%)	24 (22.0%)	7 (21.2%)	1.000
Baseline BDRS	5.75 [3.00;8.38]	5.00 [3.00;8.00]	7.00 [3.00;11.5]	0.090
BDRS (0-17) >=10	18 (12.7%)	9 (8.26%)	9 (27.3%)	0.007
Reached Functional Outcome	63 (44.4%)	42 (38.5%)	21 (63.6%)	0.019
Baseline Comorbidities (0-4)	2.00 [1.00;3.00]	2.00 [1.00;2.00]	2.00 [2.00;3.00]	0.001
APOE 4 Allele	49 (34.5%)	41 (37.6%)	8 (24.2%)	0.228
Institutional Equivalent Care	26 (18.3%)	16 (14.7%)	10 (30.3%)	0.076
Reached Institutional Outcome	70 (49.3%)	53 (48.6%)	17 (51.5%)	0.926

TABLE 2

Predictors	Death			Cognitive Endpoint			Functional Endpoint			Institutional Equivalent Endpoint		
	Hazard Ratio	95% CI	p	Hazard Ratio	95% CI	p	Hazard Ratio	95% CI	p	Hazard Ratio	95% CI	p
Crude EPS-M	2.85	1.63 – 4.99	<0.001	1.37	0.51 – 3.71	0.531	2.26	1.16 – 4.40	0.017	0.84	0.37 – 1.91	0.685
Observations	142			134			124			116		
R ² Nagelkerke	0.202			0.016			0.105			0.004		
Adjusted EPS-M	2.57	1.30 – 5.10	0.007	2.45	0.76 – 7.91	0.134	5.59	2.36 – 13.27	<0.001	1.32	0.49 – 3.59	0.586
Observations	142			134			124			116		
R ² Nagelkerke	0.555			0.456			0.580			0.348		