

Survival of Veterans with Parkinson's Disease

Sheng-Han Kuo MD,^{1,2} Suzanne Moore, BA¹ and Eugene C. Lai, MD PhD^{1,2}

¹Parkinson's Disease Research, Education and Clinical Center (PADRECC), Michael E. DeBakey Veterans Affairs Medical Center and ²Baylor College of Medicine, Houston, Texas

Objective & Background:

Veterans Health Administration (VHA), the single largest United States healthcare provider, established six Parkinson's Disease Research, Education and Clinical Centers (PADRECCs) in 2001 aiming to improve the care of veterans with Parkinson's disease (PD). It has been eight years since the establishment of the PADRECCs and more data are available on veterans with PD under the care of movement disorders specialists. This study is to understand the survival of veterans with PD in a tertiary referral Veterans Affairs Medical Center and to find out the predictive factors for survival in this specific population.

Design/Methods:

Patients with PD diagnosed between 1 January 1998 and 31 December 2000 and continued to be followed at the Michael E. DeBakey Veterans Affairs Medical Center (MEDVAMC) in Houston were identified. All charts of ICD code identified cases were reviewed for the cardinal symptoms of PD, including tremor, rigidity, bradykinesia, and postural instability. The final diagnosis of PD was confirmed with the presence of at least two cardinal symptoms and the absence of other alternative diagnoses and was made by consensus among movement disorders specialists in the PADRECC.

All the medical and neuropsychiatric comorbidities were recorded in detail and divided by different organ systems. History of PD medications use was also recorded. Vital status was obtained from the VHA database and social security death index (SSDI) in the United States as of 1 November, 2008. PD patients were divided into 'the deceased group' and 'the survived group'. The neuropsychiatric/medical comorbidities and PD medication history were compared between the two groups. The comparison was analyzed by Mann-Whitney U, Chi-square with continuity correction, or Fisher's exact test, with statistical significance $\alpha < 0.05$. All means were presented as mean \pm SEM.

ACKNOWLEDGMENT: This research was supported by the Department of Veterans Affairs.



Figure 1. Survival of veterans with Parkinson's disease

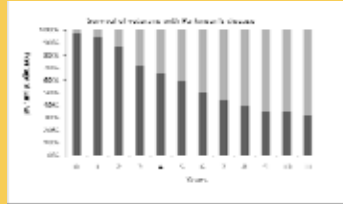


Figure 2. Survival by diagnosis before and after age 75

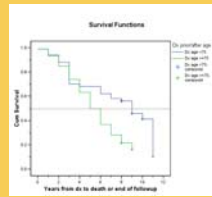


Table 1. Basic demographics of veterans with Parkinson's disease.

	Survived (N=30)	Deceased (N=66)	P value
Male gender	100% (30)	91% (62)	0.31
Caucasian Race	83% (25)	82% (54)	1.00
Age of onset	65.60 \pm 2.66 (20)	71.86 \pm 1.07 (37)	0.09
Age of diagnosis	68.07 \pm 1.96 (30)	74.70 \pm 0.74 (66)	0.005*
Onset to diagnosis	1.75 \pm 0.33 (20)	2.35 \pm 0.37 (37)	0.48
Death age		79.48 \pm 0.74 (66)	
Time from diagnosis to death		4.86 \pm 0.34 (66)	
PIGD predominance	13.33% (4/29)	34.84% (23/64)	0.053
Smoking	48.28% (14/29)	40.74% (22/54)	0.67
Alcohol use	40.74% (11/27)	41.07% (23/56)	1.00

Table 2. Medication history of veterans with Parkinson's disease.

Medication history	Survived (N=30)	Deceased (N=64)	P value
Dopamine agonist	60.00% (18)	45.31% (29)	0.27
Carbidopa/levodopa	80.00% (24)	76.56% (49)	0.91
MOAI	33.33% (10)	28.13% (13)	0.27
Amantadine	33.33% (10)	9.09% (18)	0.78
COMT I	16.67% (5)	9.38% (6)	0.32
Deep brain stimulation	3.33% (1)	1.56% (1)	0.54
Botulinum toxin	6.67% (2)	0% (0)	0.10
SSRI	10.00% (3)	18.75% (12)	0.37
Antipsychotics	16.67% (5)	29.68% (19)	0.27
Cholinesterase inhibitors	16.67% (5)	17.19% (11)	1.00
Mamentine	6.67% (2)	7.81% (5)	1.00
Valproic acid	3.33% (1)	10.94% (7)	0.43
Anticholinergics	13.33% (4)	9.38% (6)	0.72
Lithium	0% (0)	4.69% (3)	0.55

Table 3. Neuropsychiatric and medical comorbidities in veterans with Parkinson's disease

Comorbidities	Survived (N=30)	Deceased (N=66)	P value
Neurological			
Dementia	33.33% (10)	30.30% (20)	.66
Stroke	3.33% (1)	10.61% (7)	
Essential tremor	13.33% (4)	3.03% (2)	
Restless leg syndrome	6.66% (2)	6.06% (4)	
Neuropathy	10.00% (3)	9.09% (6)	
Hearing loss	16.67% (5)	28.79% (19)	0.35
Psychiatric			
Depression	16.67% (5)	19.70% (13)	
Bipolar disorder	0% (0)	10.61% (7)	
Schizophrenia	0% (0)	3.03% (2)	
Anxiety	10.00% (3)	9.09% (6)	
Post traumatic stress disorder	6.66% (2)	1.51% (1)	
Cardiovascular			
Hypertension	43.33% (13)	39.39% (26)	0.88
Coronary artery disease	20.00% (6)	34.85% (23)	
Congestive heart failure	6.66% (2)	15.15% (10)	
Atrial fib/flutter/arrhythmia	10.00% (3)	14.71% (10)	
Peripheral vascular disease	3.33% (1)	14.71% (9)	
Orthostatic hypotension	6.66% (2)	12.12% (8)	
Pulmonary			
Chronic obstructive lung disease	10.00% (3)	4.54% (3)	0.61
Obstructive sleep apnea	0% (0)	4.54% (3)	
Gastrointestinal			
Constipation	10.00% (3)	10.60% (7)	0.31
Peptic ulcer disease	6.66% (2)	9.09% (6)	
Hepatitis	6.66% (2)	1.51% (1)	
Endocrinological			
Diabetes	20.00% (6)	27.27% (18)	
Hyperlipidemia	33.33% (10)	25.76% (17)	
Hypothyroidism	16.67% (5)	15.15% (10)	0.85
Gentourinary			
Chronic kidney disease	3.33% (1)	15.15% (11)	0.71
Benign prostatic hyperplasia	20.00% (6)	21.21% (14)	
Erectile dysfunction	10.00% (3)	1.52% (1)	
Oncological			
All cancers	40.00% (12)	28.79% (19)	0.39
Systemic cancers	20.00% (6)	21.21% (14)	
Hematological			
Anemia	13.33% (4)	13.64% (9)	1.00
Others			
Osteoarthritis	30.00% (9)	13.64% (9)	0.29
Seborrheic dermatitis	6.66% (2)	4.55% (3)	
Actinic keratosis	6.66% (2)	4.55% (3)	

Results:

- 66 of 96 veterans (68.8%) with PD were deceased by the end of the study period at 1 November 2008, an 11-year followup.
- The mean age at diagnosis of PD was 72.63 \pm 0.85 years old and the mean follow-up time from PD diagnosis to either death or end of the study period was 6.05 \pm 0.30 years. The mean age of death was 79.48 \pm 0.74 years old. Survivors were followed up for an average of 8.67 \pm 0.16 years.
- The deceased PD patients tended to be older at diagnosis. The median survival after diagnosis for those diagnosed before age 75 was 9 years compared with 5 years for those diagnosed at or after age 75.
- The deceased PD patients exhibited less rest tremor and had higher percentage of postural instability and gait disorder subtype.
- Comorbidities and medications used did not differ significantly between the deceased patients and the survivors.

Conclusions:

- Parkinson's disease patients included in this study were predominantly Caucasian men as would be expected in a veteran population.
- Patients had multiple comorbidities and were on multiple medications.
- Study PD patients were, on average, older at diagnosis than is commonly seen with PD patients.