



Efficacy of Liquid Sinemet on Non-motor Symptoms in Parkinson's disease

M Danoudis^{1,2} C B Sung¹ and R Ianse^{1,2}

¹ Clinical Research Centre for Movement Disorders and Gait; Parkinson's Foundation Center of Excellence, Monash Health, Kingston Centre, Cheltenham.

² Faculty of Medicine, Nursing and Health Sciences, Monash University



Objective

To investigate the effect of liquid sinemet on the non-motor symptoms of people with advanced Parkinson's disease (PD) with complex motor fluctuations.

Background

Advanced PD sees a decline in the response to tablet formulations of PD medications, resulting in motor and non-motor fluctuations. When fluctuations are refractory to tablet formulations of levodopa, neurologists at the Kingston Centre routinely trial levodopa in solution (levodopa/carbidopa/ascorbic acid solution or LCAS)¹. LCAS preparations consist of a soluble solution of 1 mg/ml of levodopa (sinemet) administered hourly during the person's waking day. The effect of LCAS on non-motor symptoms has not been reported.

Methods

Subjects

Participants with PD were eligible for this study if: 1) they experienced complex motor fluctuations that could not be adequately managed with tablet formulations of levodopa; 2) they agreed to a trial of LCAS; 3) MMSE \geq 24.

Procedure

Participants were admitted to the in-patient unit of the Kingston Centre Movement Disorders Program to trial LCAS. Questionnaires were administered while the participants were taking their usual PD tablets (Test 1).

Tablet formulations were then ceased and titration on LCAS commenced. Once an appropriate schedule of LCAS was determined for the individual, the questionnaires were repeated (Test 2).

Outcomes

The primary outcome was the change from Test 1 to Test 2 in non-motor scores on the Non-Motor Symptoms Questionnaire (NMSQuest). The NMSQuest includes 30 items requiring a 'yes' response, scored as 1, or 'no' response, scored as 0. A lower score indicates fewer non-motor symptoms.

Secondary outcomes included: 1) the MDS-UPDRS Part I non-motor experiences of daily living; 2) the Geriatric Depression Scale (GDS); and 3) the PD health related quality of life questionnaire, PDQ39. The overall score (summary index SI) and scores for each of the PDQ39 eight domains were included in the analysis (Table 2).

Data Analysis

Paired t-test was used to compare within group differences between Test 1 and Test 2.

Results

Table 1. NMSQuest, MDS-UPDRS Part I, GDS

Outcome N = 11	Mean (SD) Test 1 V Test 2	P value 2 tailed t-test
NMSQuest	12.4 (4.8) V 9.5 (5.5)	P = 0.07 (P = 0.04 1 tailed t-test)
MDS-UPDRS Part I Q1.1 – Q1.13 Total score	13.7 (6.0) V 10.2 (7.2)*	P = 0.04
GDS	5.7 (3.8) V 2.2 (1.6)	P = 0.02

* = reached the minimal clinically important difference of improvement (-2.64 points)²

Table 2. PDQ39 SI and 8 individual domains

Domain N = 11	Mean (SD) Test 1 v Test 2	P value 2 tailed t-test
Summary Index	40.4 (14.5) V 26.3 (12.3)*	P = 0.001
Mobility	55.0 (20.5) V 43.6 (23.0)	P = 0.03
ADL	42.8 (22.4) V 29.9 (25.1)	P = 0.08
Emotional Well Being	42.4 (15.8) V 23.9 (17.3)	P < 0.001
Stigma	32.4 (22.7) V 18.8 (15.1)	P = 0.002
Social Support	38.3 (31.0) V 16.7 (20.7)	P = 0.02
Cognition	31.8 (20.6) V 27.8 (21.7)	P = 0.27
Communication	40.2 (18.2) V 24.2 (13.2)	P = 0.006
Bodily Discomfort	40.2 (15.7) V 25.8 (13.2)	P = 0.004

* = reached the minimal clinically important difference of improvement (-4.72 points)³

Summary

This study provides evidence for the short term effectiveness of LCAS in the management of non-motor symptoms in PD. Improvement occurred in multiple domains, including the number of non-motor symptoms, function, mood and well being. LCAS is a low cost, non-invasive and easily administered formulation of levodopa that can be readily titrated to provide maximum consistent benefit.

References

1. Kurth MC et al. Neurology 1993; 43(5)
2. Horvath K et al. Mov Disord 2017; 32 (5)
3. Horvath K et al. Neuroepidemiology 2017; 48

This project was supported by the Lions John Cockayne Memorial Fellowship Trust Fund.

Contact: Mary.Danoudis@monashhealth.org