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

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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 ≥ 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).

Table 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

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N = 11</th>
<th>Mean (SD) Test 1 v Test 2</th>
<th>P value 2 tailed t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMSQuest</td>
<td>12.4 (4.8) V 9.5 (6.5)</td>
<td>P = 0.07</td>
<td>P = 0.04 1 tailed t-test</td>
</tr>
<tr>
<td>MDS-UPDRS Part I Q1.1 – Q1.13 Total score</td>
<td>13.7 (6.0) V 10.2 (7.2)</td>
<td>P = 0.04</td>
<td></td>
</tr>
<tr>
<td>GDS</td>
<td>5.7 (3.8) V 2.2 (1.6)</td>
<td>P = 0.02</td>
<td></td>
</tr>
</tbody>
</table>

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

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
2. Horvath K et al. Mov Disord 2017; 32 (5)
3. Horvath K et al. Neuroepidemiology 2017; 48

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