Efficacy of sublingual apomorphine in Parkinson's disease

Apomorphine administered subcutaneously either by multiple injections or by continuous infusion is used to treat on-off fluctuations in Parkinsonian patients. However, the complexity of the techniques of injection, especially with continuous infusion mini-pumps, and the frequency of local side effects have limited the widespread use of the therapy.

Apomorphine taken orally reduces the on-off effects in Parkinsonian patients but the high doses (400–1600 mg/day), required to obtain a therapeutic response, leads to dose-dependent urosepsis.

Sublingual apomorphine is prescribed as an emetic in the treatment of alcoholism. The rich vascularity of the sublingual area makes absorption very rapid. Also, the catabolism of apomorphine may be slowed down by a diminution of the hepatic first-pass metabolism.

We carried out a study to assess the efficacy of sublingual apomorphine in 8 patients with idiopathic Parkinson's disease. Approval for the trial was granted by the ethical committee of the Faculty of Medicine of Clermont-Ferrand. All patients were given 20mg of domperidone three times daily at least 72 hours before the first administration of apomorphine. Levodopa therapy and dopamine agonists were stopped at least three days before the beginning of the trial. The study was in two steps. On day one, apomorphine was injected subcutaneously in one 3mg dose. On day two, patients were given 18mg (six 3mg tablets) apomorphine sublingually. Assessment of motor function was made by the modified Columbia scale before and after the effects were observed every five minutes thereafter until therapeutic response ceased. The switch of the response, determined by the first signs of improvement in the motor score, and its duration were also measured.

Improvement occurred in all patients whether apomorphine was administered subcutaneously or sublingually. Subcutaneous apomorphine had an effect within a mean time of 14 minutes (mean ± standard deviation, 10–15 minutes) for a mean duration of 77 minutes (extreme values: 50–110 minutes); these results are in line with those of other reports. The effect of sublingual apomorphine was slower (mean delay of onset: 30 minutes; extreme values: 20–35 minutes) but more sustained (mean duration: 120 minutes; extreme values: 85–200 minutes). The two routes of administration induced a comparable therapeutic response with a maximum mean improvement of 50% in the score on the Columbia scale.

The only drawback to sublingual tablets is their bitter taste. No clinical or biological side effects were observed. Sublingual apomorphine is of interest in the treatment of idiopathic Parkinson's disease because it is simple to administer, harmless when given once and has long-lasting effect. Other studies are required to evaluate more fully this route of administration in Parkinson's disease.

We thank Dr Pollak for his critical review of the manuscript. This work was supported by INSERM grant 89C17.

P DURIF
D DEFFOND
M TOURNILHAC
Clinique Neurologique, Hôpital Fonnaure, Avenue de Villiers, 63000 Clermont-Ferrand, France.

Table 1 CSF-SLI in Parkinson's disease (PD)

<table>
<thead>
<tr>
<th>Group</th>
<th>Male: Female</th>
<th>Mean age (range) years</th>
<th>Mean duration of illness (range) years</th>
<th>Mean H + Y stage</th>
<th>Mean dose (range) mg</th>
<th>Mean treatment (range) mg</th>
<th>Mean duration (range) years</th>
<th>Concomitant treatment drug</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD with Dementia</td>
<td>6:5</td>
<td>67 (48–76)</td>
<td>9 years (1–21)</td>
<td>3,4</td>
<td>952 (300–2000)</td>
<td>6,1 (1–12)</td>
<td>92 (300–2000)</td>
<td>Anticholinergics</td>
<td>4</td>
</tr>
<tr>
<td>(N=11)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bromocriptine</td>
<td></td>
</tr>
<tr>
<td>PD without Dementia</td>
<td>6:5</td>
<td>61 (45–74)</td>
<td>7,45 yrs (1–16)</td>
<td>2,7</td>
<td>760 (400–2100)</td>
<td>5,6 (1–16)</td>
<td>72 (400–2100)</td>
<td>Anticholinergics</td>
<td>4</td>
</tr>
<tr>
<td>(N=11)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bromocriptine</td>
<td></td>
</tr>
</tbody>
</table>

H + Y = Hoehn and Yahr.

CSF somatostatin-like immuno-reactivity in dementia of Parkinson's disease

Decreased cortical concentrations of somatostatin-like immunoactivity (SLI) have been one of the principal biochemical abnormalities found in the brains of patients with Alzheimer's disease. Degeneration of somatostatinergic neurons has also been implicated in the pathophysiology of dementia in Parkinson's disease. Whereas brain somatostatinergic neurons seem to be reflected in the cerebrospinal fluid (CSF) of patients with Alzheimer-type dementia, studies of somatostatin CSF-concentrations in Parkinson's disease have so far produced conflicting results. This study was performed to re-assess whether CSF-SLI levels are altered in Parkinson's disease and whether there is a correlation between CSF-SLI concentrations and cognitive performance in patients with Parkinson's disease.

Twenty-two patients with idiopathic Parkinson's disease undergoing routine inpatient treatment gave informed consent to a diagnostic lumbar puncture. Eleven had a history of progressive deterioration of memory and other intellectual functions (Parkinson-Dementia group), while there was no evidence for dementia in the other 11 patients (non-demented group). Further clinical details are summarised in Table 1.

Eleven inpatients [four females, seven males; mean (SD) age 48 (12) years] without clinical evidence of CNS disease for whom CSF samples were available, served as controls, after agreeing to have an identical neuropsychological test battery as the patients (see below). Only patients with normal routine CSF findings were included in this control group.

Neuropsychological tests included: verbal IQ (VIQ) and performance IQ (PIQ) both
Table 2  Neuropsychological test results and SLI in three study groups mean (SD) scores

<table>
<thead>
<tr>
<th>Score</th>
<th>Full Scale IQ</th>
<th>Verbal IQ</th>
<th>Performance IQ</th>
<th>Block Design</th>
<th>Digit Symbol</th>
<th>Logical Memory (MQ)</th>
<th>Associate Learning (MQ)</th>
<th>Wordlist generation</th>
<th>SLI (mol/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD without dementia (N=11)</td>
<td>$\begin{bmatrix} 100.9 &amp; 9.7 \ 103.0 &amp; 9.7 \ 97.9 &amp; 10.7 \ 7.8 &amp; 2.8 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 6.8 \ 91.4 \ 99.1 \ 84.9 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 42 \ 108.0 \ 114.4 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 50.4 \ 50.4 \ 14.4 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 49.1 \end{bmatrix}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD with dementia (N=11)</td>
<td>$\begin{bmatrix} 82.5^{<em>} &amp; 7.5 \ 91.6 &amp; 11.9 \ 76.6^{</em>} &amp; 7.1 \ 3.0 &amp; 2.0 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 81.0^{*} \ 70.6 \ 36.4 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 25.6 \ 26.4 \ 8.0 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 56.4 \end{bmatrix}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controls (N=11)</td>
<td>$\begin{bmatrix} 101.4 &amp; 15.8 \ 101.1 &amp; 11.0 \ 99.1 &amp; 16.9 \ 9.8 &amp; 2.9 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 10.0 \ 90.4 \ 94.8 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 4.4 \ 4.5 \ 18.2 \end{bmatrix}$</td>
<td>$\begin{bmatrix} 56.0 \ 50.2 \end{bmatrix}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MQ = Memory Quotient (Wechsler Memory Scale)

*p < 0.001 One-Way ANOVA

**p < 0.05 Kruskal-Wallis

SLI = somatostatin-like immunoreactivity.

Multifocal astrocytoma presenting as action myoclonus

Action myoclonus is an uncommon presenta- tion of intracranial tumour. Action myoclonus is a common finding in patients with multifocal astrocytomas. The symptoms and signs of multifocal astrocytomas are often nonspecific. The diagnosis of multifocal astrocytomas is usually made by imaging studies, such as computed tomography (CT) or magnetic resonance imaging (MRI). The symptoms and signs of multifocal astrocytomas can include headache, seizures, and changes in mental status. The treatment of multifocal astrocytomas is usually surgical removal of the tumor, followed by radiation therapy and chemotherapy. Multifocal astrocytomas can be difficult to treat, and the prognosis is often poor. However, recent advances in the treatment of multifocal astrocytomas have improved the outcomes for patients. The treatment of multifocal astrocytomas is often a combination of surgery, radiation therapy, and chemotherapy. The specific treatment plan will depend on the size and location of the tumor, as well as the patient's overall health.

Letters to the Editor

WERNER POEWE
THomas BENKE
ELISABETH KARAMAT
LUDWIG SCHESL OSKY
MICHAELA WAGNER
Universitäts-Klinik für Neurologie, Innsbruck

GÜNTER SPERK
Institut für Pharmakologie,
Innsbruck, Austria

EK was supported by FFWF, Vienna, Austria (grant P10474). LS and MW were supported by Jubiläumsfond der Österreichischen Nationalbank (grant 3090).


Downloaded from http://jnnp.bmj.com/ on June 25, 2017 - Published by group.bmj.com
CSF somatostatin-like immunoreactivity in dementia of Parkinson's disease.

W Poewe, T Benke, E Karamat, L Schelosky, M Wagner and G Sperk

*J Neural Neurosurg Psychiatry* 1990 53: 1105-1106
doi: 10.1136/jnnp.53.12.1105-a

Updated information and services can be found at:
http://jnnp.bmj.com/content/53/12/1105.2.citation

**Email alerting service**

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/