Premorbid Personality and the Risk of Parkinson’s Disease

Kelly L. Sullivan PhD<a,b>, James A. Mortimer PhD FAAN<a>, Wei Wang PhD<a>, Theresa A. Zesiewicz MD FAAN<b>, H.J. Brownlee Jr MD<c>, Amy R. Borenstein PhD FAAN<a>

<a>Department of Epidemiology and Biostatistics, College of Public Health
<b>Department of Neurology, College of Medicine
<c>Department of Family Medicine, College of Medicine

University of South Florida, Tampa, FL, USA

Introduction

- Parkinson’s disease (PD) has been shown to be associated with premorbid personality characteristics such as inflexibility, anti-social behavior and caution.
- Most studies of parkinsonian premorbid personality relied on subjective reports of personality in early life, which may be subject to recall bias.

Objective

- Evaluate the association of PD with premorbid personality indicators in early adult life

Methods

- Case-control study
- 89 PD cases; 99 controls
- Risk-taking activities and behaviors, routinization, smoking and alcohol consumption from ages 20-35 were used as indicators of early-adult life personality.
- Logistic regression analysis was employed to examine associations between early-adult personality indicators and risk for PD controlling for age, sex and education.

Results

- Risk for PD was associated with taking or wanting to take fewer activity risks as a young adult (OR=0.78 (95% CI 0.63-0.97))
- Among women, risk for PD was associated with reduced young-adult risk taking (OR=0.69 (95% CI 0.50-0.95)) and greater preference for a routine lifestyle as a young adult (OR=1.63 (95% CI 1.05-2.53)).
- When other personality indicators were included in the model, the association between risk-taking as a young adult and PD remained unchanged.

Conclusions

- PD was associated with:
  - taking or wanting to take fewer activity risks during young adulthood
  - greater desire for routinization during young adulthood
- These results are consistent with the presence of a distinct premorbid personality.
- Findings suggest that personality characteristics in early life may be useful in the identification of individuals at higher risk for PD and provide insight into the pre-clinical period of the disease.

Odds ratios and 95% confidence intervals for PD (multiple logistic regression models)

<table>
<thead>
<tr>
<th>Risk Indicator</th>
<th>Crude</th>
<th>Adjusted for age, sex and education</th>
<th>Fully adjusted&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity risks (age &lt;35 years)</td>
<td>0.90 (0.76-1.08)</td>
<td>0.78 (0.63-0.97)&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.74 (0.56-0.97)&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Routinization (age 20-35 years)</td>
<td>1.18 (0.93-1.50)</td>
<td>1.16 (0.90-1.50)</td>
<td>0.88 (0.63-1.24)</td>
</tr>
<tr>
<td>Smoking (ever)</td>
<td>0.88 (0.50-1.57)</td>
<td>0.67 (0.36-1.25)</td>
<td>-</td>
</tr>
<tr>
<td>Smoking (pack-years)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.96 (0.84-1.11)</td>
<td>0.90 (0.77-1.04)</td>
<td>0.92 (0.78-1.08)</td>
</tr>
<tr>
<td>Alcohol use (ever)</td>
<td>1.30 (0.60-2.83)</td>
<td>1.48 (0.63-3.49)</td>
<td>-</td>
</tr>
<tr>
<td>Alcohol consumption (drink-years)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.02 (0.99-1.05)</td>
<td>1.01 (0.98-1.04)</td>
<td>1.02 (0.99-1.06)</td>
</tr>
</tbody>
</table>

<sup>a</sup>Adjusted for age, sex and education as well as other personality indicators (except Ever Smoking and Ever Alcohol Use)
<sup>b</sup>Units of 10 pack-years;  <sup>c</sup>Units of 10 drink-years;  <sup>d</sup>p<0.05