Higher risk of cognitive impairment in Parkinson’s disease with comorbid diabetes

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OBJECTIVE
To determine the risk of cognitive impairment in individuals with Parkinson’s disease (PD) and diabetes.

BACKGROUND
Diabetes is associated with risk of cognitive impairment in elderly individuals. Recent research has suggested a possible link between metabolic processes in diabetes and Parkinson’s disease.

METHODS
Using data from the National Parkinson Foundation’s Quality Improvement Initiative (NPF-QII), a longitudinal outcomes study of subjects managed in an expert care setting without exclusions, and with well-controlled diabetes (i.e., asymptomatic) were compared with a control group without comorbidities. There are 2058 individuals without comorbidities and 85 individuals reporting asymptomatic diabetes in the cohort. The groups were compared through the computation of a weighted average matching the frequency of subjects by age and duration after adjusting for sex and body mass index (BMI). For contrast, the analysis was repeated considering other comorbid conditions: arthritis, cancer, other neurological conditions, and respiratory illness. Outcomes for the diabetes and control group were compared using a previously described subset of the MoCA for cognition and also HRQL (PDQ-39), mobility (timed up-and-go), falls, hospitalizations, and caregiver strain. Significance was determined by \( p < 0.01 \).

RESULTS

Figure 1: Subjects in the dataset

- Subjects with symptomatic diabetes
- Subjects with asymptomatic diabetes
- Total subjects
- Subjects with follow-up

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<th>3K</th>
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<tr>
<td>Subjects with asymptomatic diabetes</td>
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</table>

1099 subjects (12%) reported diabetes, 927 of whom (75\%) were considered to be well managed, reporting no symptoms.

Figure 2: Diabetes and cognitive outcomes

Verbal fluency and patient-reported cognitive outcomes were significantly worse \(( p = 0.007)\) in case-mix adjusted populations with well-managed (asymptomatic) diabetes versus controls. No difference was found in delayed recall.

Higher is worse

Table: Association of diabetes with demographics

- **Fract with diabetes** vs controls
- **PDQ-39 cognition** vs controls

Figure 3: Association of diabetes with demographics

The prevalence of diabetes increases with age. The reversal after 19 years in the increasing prevalence with disease duration is likely due to patients with advancing Parkinson’s and complex comorbidities being unable to continue their follow-up at an academic medical center.

RESULTS

The diabetes group was found to have significantly worse cognition \(( p = 0.0007)\) than the control group, with mean cognitive scores in the diabetes group 0.34 SD lower than the group lacking comorbidities. No other outcome was significant. No other comorbidity considered significantly impacted cognition; however, there was an effect on HRQL, mobility, and hospitalization rates. Based on these results, a 65-year-old individual with a 5-year history of PD and diabetes had a 53% increased risk of cognitive impairment when compared to a diabetes-free PD patient.

CONCLUSION

Individuals with PD and diabetes should be carefully evaluated for cognitive impairment and further study of this group could provide insight into optimal care.

REFERENCES


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