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# High Prevalence of Undiagnosed Insulin Resistance in Non-Diabetic Subjects with Parkinson's Disease

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## Abstract

**Background:** Reduced glucose tolerance has been long recognized as a potential risk factor for Parkinson's disease (PD), and increasing scrutiny is currently being placed on insulin resistance (IR) as a pathologic driver of neurodegeneration. However, the prevalence of IR in PD is unknown.

**Objective:** To determine IR prevalence in non-diabetic patients with PD and to correlate IR with other metabolic indicators, motor and non-motor symptoms (NMS) of PD, and quality of life (QoL).

**Methods:** Non-diabetic patients with a diagnosis of PD were identified and tested for fasting insulin, fasting glucose, and HbA1c. Patients were also offered to take a battery of clinical tests (MoCA, NMSQ, and PDQ-39) and had their PD medications, height, weight, and other demographic features recorded. IR was defined as HOMA-IR≥2.0 and/or HbA1c≥5.7. IR abnormalities were correlated with BMI and demographic features, in addition to motor and NMS.

**Results:** 154 subjects (109 M, 45F, mean age 67.7±10.5) were included in this study. Mean HOMA-IR was 2.3±1.8. Ninety out of 154 (58.4%) subjects had abnormal IR. IR was more frequent in overweight and obese subjects (61.1% and 82.8% respectively) than normal weight subjects (41.5%). Multivariate analysis showed that BMI was the only significant predictor of IR ($p < 0.0001$). There was no significant correlation between HOMA-IR and MoCA, PDQ-39, and NMSQ scores.

**Conclusions:** IR is prevalent in PD and it correlates with BMI. A correlation between IR with cognitive and QoL measures cannot be determined on the basis of this sample.

**Keywords:** Body mass index; Parkinson's disease; cognition; insulin resistance.

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