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Objective: Autonomic dysfunction is an important non-motor symptom of Parkinson's disease (PD), with point prevalence estimates of approximately 50-70%. Common presentations include cardiovascular dysregulation, gastrointestinal dysfunction, impaired thermoregulation, and sexual dysfunction. In the present study, we sought to examine whether autonomic symptoms would predict trajectories of change in depression and anxiety over a 5-year period in newly diagnosed individuals with PD. Given that alterations in autonomic nervous system functioning (e.g., reduced heart rate variability, lower autonomic arousal) are frequently observed in individuals who have anxiety and depression, as well as the negative influence these symptoms can have on quality of life/functioning, we predicted that greater autonomic symptoms would be related to increased mood symptoms over time.
Participants and Methods: Participants included 414 individuals from the Parkinson's Progression Markers Initiative, a prospective study of newly diagnosed and untreated individuals with PD. The PD participants (mean age=61.6+9.7, mean education=15.6+3.0, 92.5% non-Hispanic White) were followed annually for up to five years. Self-reported autonomic symptoms were measured using the Scales for Outcomes in Parkinson's Disease–Autonomic Dysfunction (SCOPA–AUT), which consists of a total score and 6 subdomain scores (gastrointestinal, urinary, cardiovascular, thermoregulatory, pupillomotor, sexual). Mood measures included the Geriatric Depression Scale (GDS) and State-Trait Anxiety Inventory (STAI). Motor severity was assessed using the Unified Parkinson's Disease Rating Scale (UPDRS) Part III. Bootstrapped linear regressions were performed to evaluate the relationship between autonomic symptoms (subdomains) and mood using data from the last visit (year 5). For longitudinal analyses, bootstrapped multilevel modeling was used to examine a) changes in SCOPA–AUT total over time (unconditional growth model only) and b) the relationship between mood and SCOPA–AUT total score over time, controlling for age/sex and motor severity.
Results: Autonomic symptoms explained 28.2% of the total variance in trait anxiety, with unique predictors of gastrointestinal (β=.266, p<.001) and thermoregulatory (β=.202, p=.004) symptoms. For depression, autonomic symptoms explained 27.9% of the total variance, with unique predictors of gastrointestinal (β=.225, p=.012), thermoregulatory (β=.178, p=.013), and cardiovascular (β=.154, p=.012) symptoms. There was a gradual linear increase in total autonomic symptoms over time (b=0.86, p<.001). Greater total autonomic symptoms were associated with higher average trait anxiety (b=0.54, p<.001), slightly greater increase in trait anxiety over time (b=0.04, p<.05), and occasion-to-occasion fluctuations in trait anxiety (b=0.24, p<.001). Similarly, increased total autonomic symptoms were associated with higher average depressive symptoms (b=0.14, p<.001), minimally greater increase in depressive symptoms over time (b=0.01, p<.05), and occasion-to-occasion fluctuations in depressive symptoms (b=0.08, p<.001). Motor severity did not explain individual differences or trajectories of change in depression or trait anxiety.
Conclusions: Autonomic symptoms, particularly gastrointestinal, cardiovascular, and thermoregulatory dysfunction, were related to increased mood symptoms in PD patients and predicted increases in depression/anxiety over time. Our findings do not distinguish between two theoretical possibilities – whether autonomic symptoms lead to depression/anxiety versus involvement of co-occurring neural systems underlying both. Regardless, our study highlights the importance of treating autonomic dysfunction in early PD, and future work should incorporate additional measures of autonomic dysfunction (e.g., physiological probes).

Categories: Movement and Movement Disorders
Keyword 1: Parkinson's disease
Keyword 2: depression
Keyword 3: anxiety
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4 An Update: Greater Apathy Associated with Selective Serotonin Reuptake Inhibitor Use in Parkinson's Disease

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https://doi.org/10.1017/S1355617723002023 Published online by Cambridge University Press

Objective: Apathy is a primary lack of motivation that is frequently reported in Parkinson's disease (PD) and often misdiagnosed as depression. In PD, apathy worsens over time with motor symptom progression. Evidence over the past 15 years has documented that use of selective serotonin reuptake inhibitors (SSRIs) is associated with increased apathy in patients with depression, including individuals with PD. In PD, this appears to be related to downregulation of dopaminergic systems by serotonin. Despite increasing evidence, SSRIs continue to be heavily prescribed in individuals with PD—potentially worsening apathy and decreasing quality of life for these individuals. This study is an update, re-examining the relationship between apathy and the use of SSRIs and other antidepressants in a large cohort of individuals with PD.
Participants and Methods: Participants included a convenience sample of 387 nondemented individuals with idiopathic PD who were in their mid-60's (mean age=64.9+8.72 years), well-educated (mean=14.95+2.78 years), predominantly male (72.4%), non-Hispanic white (94.5%), and in mid-stage of disease severity (on medication Unified Parkinson Disease Rating Scale motor score=25.3+10.1). All scored above clinical cutoff for dementia on a cognitive screener (Dementia Rating Scale-2 (DRS) > 125). Medications, cognitive, mood, and clinical data were extracted from chart review. Depression and apathy were measured using the Beck Depression Inventory-II (BDI-II) and the Apathy Scale (AS). Antidepressant medications were grouped into SSRIs, serotonin and norepinephrine reuptake inhibitors (SNRIs) and other. Analyses included bootstrapped Pearson's correlations, Pearson's chi-square, and linear regressions
Results: Among 387 individuals with PD, 41.3% (N=160) were taking antidepressant medications. Of these 160, 61.3% were on SSRIs, 24.4% on SNRIs, and the remainder on other antidepressants. Approximately 36.9% of the 387 PD patients exceeded recommended clinical cutoffs for apathy (AS >14) and 23.5% for depression (BDI-II >14) (Starkstein et al., 1992; Beck et al., 1996). Individuals taking SSRIs (N=98, χ^2=5.14, p=0.023) or SNRIs (N=39; χ^2=5.43, p=0.020) were more likely to be clinically apathetic than those taking other depression medications (N=23; χ^2=1.28, p=0.26). Results of a multiple regression with age, education, disease duration, motor severity, DRS-2, BDI-II, and all psychotropic medications (anti-depressants, anti-anxiety, anti-psychotics) as independent variables explained 42.8% of the variance in total apathy scores (F[17,285]=12.550, p<0.001). SSRIs were the only medication to significantly predict greater AS scores (β=0.110, p=0.020) in this model. Less education (β=-0.119, p=0.017) worse cognition (β=-0.128, p=0.009), and greater depressive symptoms (β=0.561, p<0.001) were also significant predictors of apathy.
Conclusions: These findings suggest that use of SSRIs, but not other antidepressants, is associated with greater apathy in PD. Given the interactive relationship between serotonin and dopamine, the current findings highlight the importance of considering apathy as a potential adverse effect when determining which anti-depressants to prescribe to individuals with PD. Similarly, switching a SSRI for an alternative anti-depressant in individuals with PD who are apathetic may be a potential treatment for apathy that needs further study. Longitudinal studies are also needed to elucidate the relationship of apathy and anti-depressant use over time, specifically to determine potential causality of this observed association.
Funding: T32-NS082168

Categories: Movement and Movement Disorders
Keyword 1: Parkinson's disease
Keyword 2: apathy
Keyword 3: psychopharmacology
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5 Anticholinergic Medications, Cognition, and Parkinson's Disease. Do Medications matter?

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Objective: While Parkinson's disease (PD) is traditionally known as a movement disorder, cognitive decline is one of the most debilitating and common non-motor symptoms. Cognitive profiles of individuals with PD are notably heterogeneous (Goldman et al., 2018). While this variability may arise from the disease itself,

https://doi.org/10.1017/S1355617723002023 Published online by Cambridge University Press