Sleep Research Society®

Article Navigation

Brain atrophy in Parkinson's disease with polysomnography-confirmed REM sleep behavior disorder

Shady Rahayel, Malo Gaubert, Ronald B Postuma, Jacques Montplaisir, Julie Carrier, Oury Monchi, David Rémillard-Pelchat, Pierre-Alexandre Bourgouin, Michel Panisset, Sylvain Chouinard ... Show more

Sleep, Volume 42, Issue 6, June 2019, zsz062, https://doi.org/10.1093/sleep/zsz062
Published: 07 March 2019 **Article history ▾**

Views ▼ Cite Permissions Share ▼

Abstract

We aimed to investigate cortical and subcortical brain alterations in people with Parkinson's disease with polysomnography-confirmed rapid eye movement (REM) sleep behavior disorder (RBD). Thirty people with Parkinson's disease, including 15 people with RBD, were recruited and compared with 41 healthy controls. Surface-based cortical and subcortical analyses were performed on T1-weighted images to investigate thickness and shape abnormalities between groups, and voxel-based and deformation-based morphometry were performed to investigate local volume. Correlations were performed in patients to investigate the structural correlates of motor activity during REM sleep. People with RBD showed cortical thinning in the right perisylvian and inferior temporal cortices and shape contraction in the putamen compared with people without RBD. Compared with controls, people with RBD had extensive cortical thinning and volume loss, brainstem volume was reduced, and shape contraction was found in the basal ganglia and hippocampus. In comparison to controls, people without RBD showed more restricted thinning in the sensorimotor, parietal, and occipital cortices, reduced volume in the brainstem, temporal and more posterior areas, and shape contraction in the pallidum and hippocampus. In Parkinson's disease, higher tonic and phasic REM sleep motor activity was associated with contraction of the thalamic surface, extensive cortical thinning, and subtle volume reduction in the middle temporal gyrus. In Parkinson's disease, the presence of RBD is associated with extensive cortical and subcortical abnormalities, suggesting more severe neurodegeneration in people with RBD. This provides potential neuroanatomical correlates for the more severe clinical phenotype reported in people with Parkinson's disease with RBD.

REM sleep behavior disorder, Parkinson's disease, Structural MRI, cortical thickness

Topic:

phenotype

physical activity

magnetic resonance imaging

parkinson disease

hippocampus

polysomnography

putamen

rem sleep behavior disorder

rem sleep

thalamus

brain

brain stem

cerebral atrophy

voxel

subcortical

Issue Section: Neurological Disorders

American Academy of Sleep Medicine members

Sign in via society site

Sign in via your Institution

Sign in

Purchase

Subscription prices and ordering

Short-term Access

To purchase short term access, please sign in to your Oxford Academic account above.

Don't already have an Oxford Academic account? Register

Brain atrophy in Parkinson's disease with polysomnography-confirmed REM sleep behavior disorder - 24 Hours access

EUR €36.00 GBP £28.00 USD $45.00

Rental

Read this now at deepdyve

This article is also available for rental through DeepDyve.

15 View Metrics

Email alerts

New issue alert

Advance article alerts

Article activity alert

Subject alert

Receive exclusive offers and updates from Oxford Academic

More on this topic

Simultaneous tonic and phasic REM sleep without atonia best predicts early phenoconversion to neurodegenerative disease in idiopathic REM sleep behavior disorder

REM sleep without atonia with REM sleep–related motor events: broadening the spectrum of REM sleep behavior disorder

The Role of the Serotonergic System in REM Sleep Behavior Disorder

REM Sleep Behavior Disorder in the Korean Elderly Population: Prevalence and Clinical Characteristics

Related articles in

Google Scholar

Related articles in PubMed

Treatment and persistence/recurrence of sleep-disordered breathing in children with Down syndrome.

Obstructive sleep apnea in 2-6Â year old children referred for adenotonsillectomy.

Targeted repositioning identifies drugs that increase fibroblast growth factor 20 production and protect against 6-hydroxydopamine-induced nigral cell loss in rats.

Matched cohort analysis of peri-operative outcomes following total knee arthroplasty in patients with and without Parkinson's disease.

Citing articles via

Google Scholar

CrossRef

Latest | **Most Read** | **Most Cited**

Characterization of the sleep disorder of anti-IgLON5 disease

Actigraphic detection of periodic limb movements: development and validation of a potential device-independent algorithm. A proof of concept study

Simultaneous tonic and phasic REM sleep without atonia best predicts early

phenoconversion to neurodegenerative disease in idiopathic REM sleep behavior disorder

Residual symptoms after natural remission of insomnia: associations with relapse over 4 years

Sleep duration and fragmentation in relation to leukocyte DNA methylation in adolescents

Online ISSN 1550-9109
Print ISSN 0161-8105