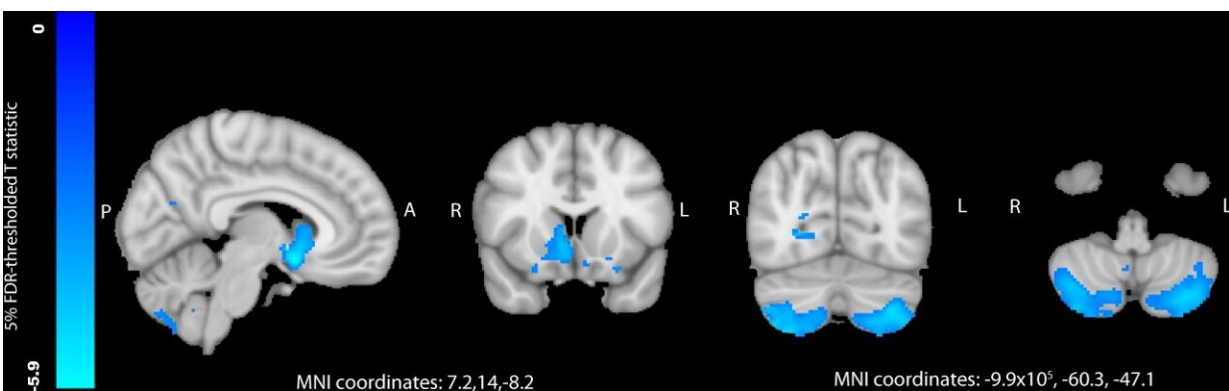


Gout strongly associated with reduced gray matter and increased neurodegenerative disease

June 12 2023, by Justin Jackson



Differences in regional gray matter volume between participants with gout (n = 1,165) and controls (n = 32,202), as analyzed by voxel-based morphometry. Blue regions represent areas where participants with gout had significantly less gray matter. T statistics are thresholded at a 5% false discovery rate (0.0013 threshold on uncorrected P values). Models adjusted for: age, age², alcohol units weekly, imaging site, smoking status, waist-hip-ratio, total household income. FDR false discovery rate, L left, R right, A anterior, P posterior, MNI Montreal Neuroimaging Institute. Credit: *Nature Communications* (2023). DOI: 10.1038/s41467-023-38602-6

The University of Oxford, U.K., has led a study into the relationship between gout and neurodegenerative disease. In the paper, "Association of gout with brain reserve and vulnerability to neurodegenerative

disease," published in *Nature Communications*, the team finds remarkable links between the common arthritis joint ailment and neurodegenerative disease.

The results from a combination of observational and [genetic approaches](#) indicate that [gout patients](#) have smaller global and regional brain volumes and markers of higher brain iron.

Participants with [gout](#) also had higher incidences of all-cause dementia, Parkinson's disease, and probable essential tremor, particularly in the first three years after diagnosis.

The observations suggest that lower neuroanatomic resources among gout patients may explain their higher vulnerability to multiple [neurodegenerative diseases](#). Genetic associations mostly mirrored observational ones. Both genetically predicted gout and serum urate were significantly associated with regional gray matter volumes.

Gout is the most common inflammatory arthritis affecting ~1% to 4% of the population. Insufficient kidney filtering or overproduction of uric acid can cause a build-up and the formation of tiny sharp crystals in and around joint tissues. The clinical syndrome of gout is characterized by acute joint pain and swelling resulting from urate crystals. The brain has not been previously thought to be affected.

For the study, data were analyzed from 11,735 participants (1,165 with [brain](#) imaging) with a diagnosis of gout as collected from the previous UK Biobank study. Gout was associated with a 43% higher incidence of Parkinson's disease and nearly seven times the rate of probable essential tremor compared to controls. During the UK Biobank study follow-up, deaths among gout patients were more than double those of controls (11% vs. 5%).

These results support a strong correlation between gout and neurodegenerative disease. The authors suggest that patients with gout should be monitored for cognitive and motor symptoms of neurodegenerative disease, given their increased risk, especially in the early period after diagnosis.

More information: Anya Topiwala et al, Association of gout with brain reserve and vulnerability to neurodegenerative disease, *Nature Communications* (2023). [DOI: 10.1038/s41467-023-38602-6](https://doi.org/10.1038/s41467-023-38602-6)

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