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Cell-free circulating mtDNA identifies Parkinson's disease

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(HealthDay)—Cell-free circulating mitochondrial DNA (ccf-mtDNA) from cerebrospinal fluid (CSF) is reduced in patients with Parkinson's disease (PD), according to research published in the December issue of the *Annals of Neurology*.

Angela Pyle, Ph.D., from the University of Newcastle Upon Tyne in the United Kingdom, and colleagues examined whether ccf-mtDNA was an early indicator of PD pathology. Fifty-six CSF samples from patients with PD were selected with 10 age-matched asymptomatic control CSF samples.

The researchers observed a significant reduction in ccf-mtDNA in PD cases versus controls, when analyzing two mtDNA targets: *MTND1* and *MTDN4* copy number. In receiver operating characteristic curve

analysis, *MTND1*- and *MTND4*-calculated ccf-mtDNA strongly predicted PD status (area under curve, 0.81 and 0.84, respectively). There was no significant correlation for ccf-mtDNA with CSF-tau, -phosphorylated tau, and -α-synuclein.

"Given the severity of the reduction in CSF ccf-mtDNA in PD, and supported by both subsequent measurement and remarkably similar data observed in Alzheimer's Disease, we conclude that ccf-mtDNA is a viable biomarker for the early detection of neurodegenerative disease," the authors write.

More information: Abstract
Full Text (subscription or payment may be required)