Peduncolopontine nucleus stimulation for progressive supranuclear palsy

Local field potentials were recorded bilaterally from the Peduncolopontine nucleus of 4 progressive supranuclear palsy patients at rest, with levodopa and during self-paced leg movements.

During rest, levodopa administration was associated with significantly increased alpha and reduced gamma activity in the PPN. Without levodopa, continuous movements were associated with reduced alpha and beta power. These differences between oscillatory power during movement and resting state were not observed with levodopa administration.

In PSP the changes in neuronal oscillations in the PPN region on levodopa administration are similar to those reported in IPS. The enhancement of lower frequency oscillations in the PPN is possibly influenced by a dopaminergic activation of the striatal pathway and a reduced pallidal inhibition.

Levodopa influences neuronal oscillations at low and high frequencies in the PPN region in Parkinsonian disorders [1)].

Peduncolopontine nucleus stimulation in progressive supranuclear palsy [2)].

1)
Galazky I, Zaehle T, Sweeney-Reed CM, Neumann J, Heinze HJ, Voges J, Kupsch A, Hinrichs H. Neuronal oscillations of the pedunculopontine nucleus in progressive supranuclear palsy: Influence of levodopa and movement. Clin Neurophysiol. 2019 Dec 12;131(2):414-419. doi: 10.1016/j.clinph.2019.11.033. [Epub ahead of print] PubMed PMID: 31877491.

2)
Scelzo E, Lozano AM, Hamani C, Poon YY, Aldakheel A, Zadikoff C, Lang AE, Moro E. Peduncolopontine nucleus stimulation in progressive supranuclear palsy: a randomised trial. J Neurol Neurosurg Psychiatry. 2017 Feb 18. pii: jnnp-2016-315192. doi: 10.1136/jnnp-2016-315192. [Epub ahead of print] PubMed PMID: 28214797.