

P02-553

DATABASE OF MNI STEREOTACTIC COORDINATES FOR DEEP BRAIN STIMULATION TARGETS IN NEUROPSYCHIATRIC DISORDERS

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Introduction: Deep brain stimulation (DBS) is a promising therapy option for otherwise treatment-resistant neuropsychiatric disorders, especially in obsessive-compulsive disorder (OCD), major depression (TRD) and Tourette's Syndrome (TS).

Objective: The brain coordinates of the DBS targets are mainly reported using measurements in original, unnormalized brains. In the neuroimaging community stereotactic data are mainly indicated in the standardized Montreal Neurological Institute (MNI) space, i.e. a three-dimensional proportional grid system.

Aims: Improved comparability between targets in DBS studies and molecular and functional neuroimaging data from PET, SPECT, MRI, fMRI, mostly published with stereotactic data.

Methods: A comprehensive and systematic literature search for published DBS case reports or studies in TRD, OCD and TS was performed. We extracted the tip positions of electrode leads as provided in the publications or by the authors, and transferred individual coordinates to the standard brain in the MNI space.

Results: 46 publications fulfilled the inclusion criteria. The main targets for the specific disorders and one or two examples of their calculated MNI coordinates are indicated in the table:

	Target	MNI	Target	MNI	Target	MNI	Target	MNI
TRD	subgenual part, ant. cingulate cortex	-7.9/27.2/-7	nuc. accumbens	7.5/1.5/-4	ventral striatum / ventral capsule	-6.5/1.6/-4	lateral habenula	-5.2/-25.7/5
OCD	nuc. caudatus / nuc. accumbens	-7.5/10.8/-5	ventral striatum / ventral capsule	-8.4/3.5/-4; -7.5/15.3/-5	subthalamic nucleus	-10.2/-17.9/-1; -8.4/-16.1/-1	inf. thalamic peduncle	-4.7/-9.3/-1
TS	thalamus	-5.2/-18.4/0; -11.1/-10.2/2	internal pallidum	-21.6/-8.4/-2; -22/-12.5/-5	internal capsule / nuc. accumbens	-12.5/-13.5/-7; -6.5/3/-5		

[MNI coordinates of the main DBS targets]

Conclusions: We provide DBS data of neuropsychiatric disorders in the MNI space, improving the comparability to molecular, functional and structural neuroimaging data.