

Supplementary Material

Methods

Inclusion Criteria

We followed *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) guidelines in this systematic review to include all studies that evaluated patients with brain imaging (PET, SPECT, structural MRI, diffusion-weighted MRI, functional MRI) before and after courses of treatment for OCD (i.e., pharmacotherapy, cognitive behavioral therapy [CBT], stereotactic lesions, deep brain stimulation [DBS], or transcranial magnetic stimulation [TMS]). Patient groups included adults, children, treatment naïve, and treatment refractory groups. We included studies written in English. Studies published prior to 1990 were excluded due to variability in imaging parameters.

Identification of Studies

We performed a literature search on PubMed using the Cochrane Collaboration search strategy.[S14] Search terms included: obsessive-compulsive disorder, OCD, positron emission tomography, PET, SPECT, HMPAO, diffusion tensor imaging, DTI, functional MRI, fMRI, imaging, voxel-based morphometry, VBM, volumetric MRI, resting state, SSRI, SRI, paroxetine, citalopram, clomipramine, fluoxetine, cognitive behavioral therapy, CBT, deep brain stimulation, DBS, cingulotomy, anterior capsulotomy, limbic leucotomy, subcaudate tractotomy, SCT, transcranial magnetic stimulation, and TMS. This search strategy was supplemented by a hand-search of bibliographies from studies that fit inclusion criteria. Studies were identified in April 2020.

Data Collection and Endpoints

For each study, data were recorded for treatment type, dosing (if applicable), imaging modality, number of subjects, age of subjects, past treatments, and pre- versus post-treatment imaging change. Imaging change was recorded based on imaging type and whether there was an increase, decrease, or no change of the parameter in question when comparing post-intervention imaging to pre-intervention imaging. Only changes that were statistically significant were included in the final analysis. Regions of interest (ROI) were defined based on specificity provided in the

studies reviewed; Brodmann areas (BA) were identified when possible. Imaging changes that significantly correlated with changes in symptom severity (e.g., change in Yale-Brown Obsessive-Compulsive Scale [Y-BOCS] scores)[S15-S16] are highlighted to emphasize that not all imaging changes correlated with symptom improvement. The Y-BOCS is a common symptom scale used to measure the severity of OCD symptoms, and a score greater than 24 typically defines severe OCD. A reduction of 35% or more in the score is commonly used to categorize a clinically significant treatment response.[S16]

Cross-Treatment Analysis

Fluorodeoxyglucose (FDG) PET studies were aggregated and compared using weighted histograms. PET studies were represented this way because it was the most consistently used imaging modality across treatments.

Supplementary References

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