

A Short Note on Obsessive-compulsive Disorder

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Description

Obsessive-compulsive disorder (OCD) is a debilitating mental disorder, characterized by recurrent obsessions and compulsions that affect 2.3% of people worldwide. Without proper diagnosis and treatment, OCD has a chronic waxing and waning course, with about 65% of patients achieving full remission within 5 years. This imposes a large economic burden on the patients and the countries [1]. Improvements in treatment for OCD patients have been made. Currently, pharmacotherapies and psychotherapies have become major parts of OCD treatment.

Researchers and years of clinical practices have proven its usefulness. The "response" of the treatment will be achieved in the majority of patients after pharmacotherapies or psychotherapies or both. However, some patients could not experience the benefits from those treatments, and even those that responded will have some residual symptoms. In those cases, augmentations are recommended, but when a patient has failed to respond to all typical treatment options, neuromodulator and neurosurgery approaches will be preferred. Deep brain stimulation (DBS) was approved by the US Food and Drug Administration (FDA) in 2009 as a viable treatment for refractory OCD patients. It provides an invasive but reversible way of stimulation for specific deep brain areas and uses electrodes to release currents and modulate aberrant neural activities [2]. However, as with other traditional treatments, the exact neural mechanism of DBS remains unclear, and still some patients failed to experience partial responses after implantation, as per previous meta-analyses. Taking into account the side effects and potential damage caused by DBS surgery, and to achieve better cost effects, it is important to identify good or poor DBS candidates prior to the implantation, and an outcome predictor is what we need. Several attempts have been made to build prediction models with demographic or clinical data, neuropsychological patterns, genetic data, as well as neuroimaging data, but no agreement has yet been reached. Patients with late onset of OCD and sexual/religious dimensions responded better to DBS treatment, according to a meta-analysis published in 2015 [3].

On the other hand, it has been confirmed that DBS could affect the stimulation loci and other distal regions where the neural fibers project, and this theory can answer the question of why the hyperdirect pathway could present with a predictable pattern across different targets, since nearly all the targets are located in or alongside the pathway. Considering OCD as a highly heterogeneous disease, one theory is that patients can receive personalized target selection according to their symptom dimensions. Moreover, although tractography has been a useful method in finding an optimized way of DBS implantation, it still cannot precisely demonstrate the pathway. Tractography

indirectly presents pathways of least hindrance to diffusion instead of reconstructing axons directly. So, the resolution is rather low. In addition, most of the included studies used low strength MRI and the number of patients was limited; while diffusion data are sensitive to artifacts, distinct results may emerge under these circumstances [4]. Considering that greater magnetic field strengths can cause the heating of DBS devices and subsequent brain damage, low strength MRI is much safer for scanning post-DBS neuroimaging data.

A typical model of changes in OCD symptom severity after DBS treatment involved a sharp decline in Y-BOCS scores right after implantation, then a rather stable platform period, and a slight increase trend as time went by. Current research has primarily concentrated on separating responders from non-responders, with little attention being paid to long-term prediction. Future studies might need to answer the questions about how we can predict whether the treatment effect would be maintained or not, which factors propose a responder that would become less responding, and how long the DBS effect will endure. DBS is now believed to be a promising treatment for refractory OCD patients [5].

Conflict of Interest

None.

References

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Date of Submission: 05 June, 2022, Manuscript No: jhmi-22-72490; **Editor assigned:** 07 June, 2022, PreQC No: P-72490; **Reviewed:** 10 June, 2022, QC No: Q-72490; **Revised:** 15 June, 2022, Manuscript No: R-72490; **Published:** 20 June, 2022, DOI: 10.37421/2157-7420.2022.13.422

How to cite this article: Guazzini, Andrea. "A Short Note on Obsessive-compulsive Disorder." *J Health Med Informat* 13 (2022): 422.