Neuroablative procedure

Ablative brain surgery (also known as brain lesioning) is the surgical ablation by various methods of brain tissue to treat neurological or psychological disorders. The word “Ablation” stems from the Latin word Ablatus meaning “carried away.” In most cases, however, ablative brain surgery doesn't involve removing brain tissue, but rather destroying tissue and leaving it in place.

The lesions it causes are irreversible. There are some target nuclei for ablative surgery and deep brain stimulation. Those nuclei are the motor thalamus, the globus pallidus, and the subthalamic nucleus.

see Thermoablative procedure.

Several neuroablative procedures are available for severe and treatment-resistant obsessive-compulsive disorder (OCD), but limited knowledge about their relative clinical advantages and disadvantages poses obstacles for treatment decision-making.

Lai et al. searched PubMed, Embase, Scopus, Web of Knowledge and the Cochrane Library for reports up to February 2019. They reviewed the literature on the effectiveness (assessed using the Yale Brown Obsessive Compulsive Scale [Y-BOCS]) and safety of various neuroablative interventions for severe and treatment-resistant OCD.

Results: We included 23 studies involving 487 patients in the systematic review; 21 studies with 459 patients entered meta-analysis. Overall, neuroablation achieved a response rate (proportion of patients with ≥ 35% reduction in Y-BOCS) of 55%. Most of the adverse events (88.4%) were mild and transient. The top 3 adverse events were headache (14.9%), cognitive deficits (9.1%) and behaviour problems (8.1%). Severe or permanent adverse events included personality changes (2.3%) and brain edema or brain cyst (1.5%). The response rates associated with capsulotomy, limbic leucotomy and cingulotomy were 59% (95% confidence interval [CI] 54-65), 47% (95% CI 23-72) and 36% (95% CI 23-50), respectively. Interventions with different coverages of the dorsal part of the internal capsule were associated with different adverse-event profiles but were unlikely to modify clinical effectiveness.

Limitations: The level of evidence of most included studies was relatively low.

Ablative surgeries are safe and effective for a large proportion of patients with severe and treatment-resistant OCD. Among the available procedures, capsulotomy seemed to be the most effective. Further research is needed to improve clinical effectiveness and minimize risks [1].

1)
Lai Y, Wang T, Zhang C, et al. Effectiveness and safety of neuroablation for severe and treatment-resistant obsessive-compulsive disorder: a systematic review and meta-analysis [published online ahead of print, 2020 Jun 17]. J Psychiatry Neurosci. 2020;45(4):190079. doi:10.1503/jpn.190079