Neuropsychiatric disorder treatment

Electrical neuromodulation via direct Electrostimulation (DES) is an increasingly common therapy for a wide variety of neuropsychiatric diseases. Unfortunately, therapeutic efficacy is inconsistent, likely due to our limited understanding of the relationship between the massive stimulation parameter space and brain tissue responses.

A stronger local response may require stimulation in the grey-white boundary while stimulation in the white matter could be needed for network activation. Thus, stimulation parameters tailored for a specific anatomical-functional outcome may be key to advancing neuromodulatory therapy ¹⁾.

The application of deep brain stimulation for the treatment of neuropsychiatric disorders has shown great potential to modulate pathological neural circuits and trigger endogenous neurogenesis²⁾.

Indications

For patients with psychiatric illnesses remaining refractory to 'standard' therapies, neurosurgical procedures may be considered.

Deep Brain Stimulation for depression.

Deep Brain Stimulation for obsessive-compulsive disorder.

Deep Brain Stimulation for Schizophrenia.

Surgery can be proposed for some patients affected by chronic anxiety states. It can be performed after a period of evolution of a minimum 5 Years and after all other classical treatments have failed. For the last Years, different stereotactic techniques have been used: capsulotomy, cingulotomy, subcaudate tractotomy and limbic leukotomy, performed by radiofrequency thermolesions or radiosurgery (g rays).

Guidelines for safe and ethical conduct of such procedures have previously and independently been proposed by various local and regional expert groups.

To expand on these earlier documents, representative members of continental and international psychiatric and neurosurgical societies, joined efforts to further elaborate and adopt a pragmatic worldwide set of guidelines. These are intended to address a broad range of neuropsychiatric disorders, brain targets and neurosurgical techniques, taking into account cultural and social heterogeneities of healthcare environments.

The proposed consensus document highlights that, while stereotactic ablative procedures such as cingulotomy and capsulotomy for depression and obsessive compulsive disorder are considered 'established' in some countries, they still lack level of evidence 1. Further, it is noted that deep brain stimulation in any brain target hitherto tried, and for any psychiatric or behavioural disorder, still

remains at an investigational stage. Researchers are encouraged to design randomised controlled trials, based on scientific and data-driven rationales for disease and brain target selection. Experienced multidisciplinary teams are a mandatory requirement for the safe and ethical conduct of any psychiatric neurosurgery, ensuring documented refractoriness of patients, proper consent procedures that respect patient's capacity and autonomy, multifaceted preoperative as well as postoperative long-term follow-up evaluation, and reporting of effects and side effects for all patients.

This consensus document on ethical and scientific conduct of psychiatric surgery worldwide is designed to enhance patient safety $^{3)}$.

Deep brain stimulation (DBS) for psychiatric disorders needs to be investigated in proper research trials. However, there are rare circumstances in which DBS could be offered to psychiatric patients as a form of surgical innovation, therefore potentially blurring the lines between these research trials and health care.

Bell et al discuss the conditions under which surgical innovation may be accepted as a practice falling at the frontiers of standard clinical care and research per se. However, recognizing this distinction does not settle all ethical issues.

The article offers ethical guideposts to allow clinicians, surgical teams, institutions, and institutional review boards to deliberate about some of the fundamental issues that should be considered before surgical innovation with psychiatric DBS is undertaken. They provide key guiding questions to sustain this deliberation. Then the review the normative and empirical literature that exists to guide reflection about the ethics of surgical innovation and psychiatric DBS with respect to general ethical questions pertinent to psychiatric DBS, multidisciplinary team perspectives in psychiatric DBS, mechanisms for oversight in psychiatric DBS, and capacity and consent in psychiatric DBS. The considerations presented here are to recognize the very specific nature of surgical innovation and to ensure that surgical innovation in the context of psychiatric DBS remains a limited, special category of activity that does not replace appropriate surgical research or become the standard of care based on limited evidence ⁴⁾.

1)

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