

CORRESPONDENCE

Deep Brain Stimulation for Psychiatric Disorders

by Dr. med. Jens Kuhn, Dipl.-Psych. Theo O. J. Gründler,
Dr. med. Doris Lenartz, Prof. Dr. med. Volker Sturm,
Prof. Dr. med. Joachim Klosterkötter, Dr. med. Wolfgang Huff in volume 7/2010

Additional Reference

As a psychiatrist and psychotherapist I read this article with great interest. However, my intention is not actually to comment substantially on the many questions raised by deep brain stimulation (DBS) but to provide a literature reference and give my reasons for doing so.

In his book “Tief im Hirn [Deep in the brain],” Helmut Dubiel, who had undergone DBS, published an impressive description of his treatment (1). Although in his case it was Parkinson’s disease that led to his having DBS, not a psychiatric disorder in the narrower sense, this book seems to me to be of great value for the article by Kuhn and colleagues. The doctor in charge of advice and treatment and the reader are given an exact description of the situation of a patient who is treated with DBS. The book is, of course, totally subjective, but also entirely credible and authentic.

However: is this science? An idea of the importance of patients’ (or “service users’”, as they are often referred to in English speaking countries) experiences came through in the 2009 schizophrenia guidelines from Britain’s National Institute for Health and Clinical Excellence. Tilmann Steinert comments that in spite of their formal evidence base, these official guidelines influencing English health policy contain substantial qualitative and subjective passages, for example, several detailed case histories giving patients’ own perspectives.

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Dubiel’s book is a fine example of a narrative contribution from a patient. In my opinion, the discussion around DBS would benefit from this in psychiatric illness, too. In any case, we should be discussing the option

DOI: 10.3238/arztebl.2010.0644a

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Topic for Ethics Committee

As early as in 2005 the ethics committee at Otto-von-Guericke-University in Magdeburg had the opportunity to have a discourse on the ethical problems of deep brain stimulation (DBS) for reversible treatment of functional disorders, such as Parkinson’s disease, epilepsy, chronic pain syndromes, obsessive-compulsive disorders, depression, or addiction.

It is the clinical researchers’ intention to be able to treat severely impaired, (pharmaco)therapy resistant patients. However, in order to do so they require a patient’s fully informed consent. The indication for treatment is defined by three doctors (neurologist/psychiatrist, surgeon, independent assessor). It has to be ensured that the treatment is reversible at all times by “switching off” (on-off procedure). Thus far, no permanent anatomical changes have been found.

Ethical problems include the fact that the threshold for the indication for treatment might be lowered over time (usual threshold value problems—for example, blood pressure, LDL cholesterol, HbA1c, etc). Especially in severely impaired patients who lack capacity, the indication may be of particular urgency. As in analogous cases, informed consent is obtained retrospectively. If a patient refuses to give consent then the treatment is stopped (reversibility). However, there is a risk that indications are expanded widely (in an uncontrolled fashion)—to include an artificially generated, individual “wellbeing syndrome” that is obtainable at the push of a button, a sort of “stereotactic department” in wellness hotels. Another ethical problem associated with stereotactic surgery is the almost limitless potential for manipulation by individuals.

From the perspective of scientific policy it should be a requirement for the new procedure to be developed in regions where ethical control mechanisms are available. We must not stand in the way of medical progress in Germany. International cooperation is essential.

There is no doubt that DBS is a forward looking therapeutic option. However, we need to bear in mind that it is likely that more—and more severe—adverse effects might occur than one might assume in the initial euphoric period (1).

DOI: 10.3238/arztebl.2010.0644b

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A New Opportunity

As someone who has studied functional neurosurgery I was interested to read the review article by Kuhn et al about DBS in psychiatric pathologies. Lesional, stereotactic surgery—such as was undertaken in the 1970s in sexually deviant patients, but also in people with obsessive-compulsive disorders or addiction disorders—are enlightening as early forms of DBS, and not only from a medical historical perspective. They also show that interventions affecting the phylogenetically older parts of the brain—which are being discussed here—are obviously low in side effects, and neither do they seem to trigger personality changes.

Extensive catamnestic studies in all patients in Hamburg who received stereotactic hypothalamotomies for sexual psychiatric indications (1, 2) showed that even reversible ablation of individual nuclei in the diencephalon (“interbrain”) did not result in any long term and/or substantial impairments to patients’ quality of life (in 75%, however, a permanent remission of the targeted symptom was achieved).

The comments about the severe adverse effect profile of lesional procedures to the brain to treat psychiatric disorders are thus relevant (and rightly so) only in the context of the open procedures of leucotomy/lobotomy, which were conducted throughout the 1940s and 1950s.

It is to be welcomed that studies of DBS in psychiatric disorders for psychiatric indications are nowadays supported by psychiatric/psychotherapeutic colleagues. In the past, surgical/neurosurgical treatment for mental disorders was seen—particularly by colleagues from those disciplines—as breaking a taboo, whose mere mention prompted resistance and denial—and ultimately made it impossible to discuss openly the opportunities and risks inherent in the method.

DOI: 10.3238/arztebl.2010.0645a

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In Reply:

We thank our correspondents for their contributions, and we welcome the wide ranging approval as well as the suggestions made by some of them.

We agree with Timmann that stereotactic lesional surgery on subcortical brain regions, which in some centers is considered even now for therapy resistant

psychiatric disorders (1), has yielded results that are taken into consideration when selecting a target structure for deep brain stimulation (DBS). Procedures such as anterior capsulotomy or cingulotomy have had positive effects for treatment resistant psychiatric disorders in selected patients. However, because of their destructiveness and the associated range of possible adverse effects, these procedures have not become widely accepted. They did, on the other hand, contribute to the question of whether the less invasive, potentially reversible procedure that is DBS, if used on similar anatomical structures, might minimize the previous risks and disadvantages of a surgical procedure.

We agree with Professor Meyer that it is absolutely essential that all side effects are recorded with the utmost care and in every detail in the comparatively recent research subject that is DBS in the psychiatric setting. Uncritical use prompted by the euphoria triggered by initial positive results is dangerous for the procedure itself and for the patients who are to receive DBS in the future. In this context, we wish to point out a research project into the ethical, social, and legal aspects of DBS, which is focusing on the balance of risks and benefits of the procedure and is thus also trying to find an answer to the question of whether DBS patients may develop possible personality changes (2).

Undoubtedly, initial promising results from the treatment of psychiatric patients with DBS will need to be confirmed by international multicenter studies under controlled conditions (3).

We are pleased to take up Dr Rave-Schwank’s suggestion of the book “Tief im Hirn [deep in the brain]” by Professor Dr H Dubiel. This book plays an important part in patients’ perceptions. Professor Dubiel describes, among others, his subjective experience of postoperative depression after having stimulation electrodes inserted into the subthalamic nucleus to treat his Parkinson’s disease. This serious postoperative complication is thankfully rare or transient. However, we feel the need to point out that deep brain stimulation resulted in good motor effects in Professor Dubiel, and he has actually announced at several lectures that even if being fully aware of his own disease process he would have repeated surgery if he needed to.

We also wish to note explicitly that, although the procedure in question is deep brain stimulation, its use in Parkinson’s patients is not analogous to its use in patients with therapy resistant psychiatric disorders.

DOI: 10.3238/arztebl.2010.0645b

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Conflict of interest statement

The authors of all contributions declare that no conflict of interest exists according to the guidelines of the International Committee of Medical Journal Editors.