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Ethical issues in psychosurgery

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Abstract

Psychosurgery, a discipline that emerged from psychiatry and neurosurgery, is a unique form of treatment, but even nowadays counted as a last resort for psychiatric patients. With the rapid growth of alternative psychiatric treatment options, the ethical issues related to those procedures are more commonly raised.

The purpose of this study is to present ethical dilemmas related to psychosurgery.

Among the 261 articles related to the ethics of psychosurgery for analysis 14 significant articles were selected.

Since the beginning of its existence, psychosurgery encountered several ethical isssues. Starting from its development in 20th century, when the favourable results encouraged more extensive research in this field until its first dawn, when the researchers of the New World introduced it even to non-medical professionals. Nowadays, since medicine starts to realize its limitations in terms of pharmacotherapy and psychotherapy, the psychosurgery comes back from the unpleasant history pages. Modern ethical issues include the most importantly basic ethical principles, which are crucial especially for psychiatric patients. The next important aspect is the modification of beahviour in aggressive behaviour, sociopathic patients and the threat that it will be used as a tool for behaviour modifications rather than treatment method. The positive aspect of nowadays psychosurgery is its impact on increasing the free will in patients with OCD and addiction.

Psychosurgery is one of the interesting and beneficial therapeutic options for patients struggling with treatment-resistant psychiatric disorders. The most important is to take into account the basic ethical principles and the greatest willingness to cure the patient into account while performing the psychosurgical operations.

Keywords MeSH: psychosurgery, psychiatry, neurosurgery

Introduction

Mankind has been trying to relieve the suffering of the soul and psyche for centuries, and for years has been unable to cope with the spectre of psychiatric disorders. Only after the era of psychoanalysis and Freudian psychoanalytic work, psychiatry has become a focus of interest in other areas, which partially contributed to explain its neurobiological basis and thus develop pharmacological mechanisms for treating psychiatric illnesses that, in combination with psychotherapy, have been a great method of combat in war against diseases that plague the human psyche. [1]

Unfortunately, the above methods in all their effectiveness can not help all psychiatric patients. In the face of severe side effects from pharmacotherapy and its prolonged course, it is not surprising that patients are reluctant to present the proposed therapies (at least 54% of patients with schizophrenia according to Hogan et al.). [2] The increasing number of diagnoses of mental disorders and the dangers associated with it is forcing today's medicine into intensive search for alternative and experimental therapies, with a very controversial method among them - psychosurgery.

Psychosurgery or stereotactic neurosurgery for the treatment of psychiatric disorders is a field created by the fusion of neurosurgery and psychiatry. In psychosurgery the treatment is provided within two options: ablation or stimulation [3]. Ablative treatment involves the removal of certain connections in the brain that disconnect specific pathways responsible for the pathogenesis of psychiatric conditions. An example of ablative treatment we can present subcaudate tractotomy therapy, a procedure used in severe depression consisting in the interruption of the connections between striatum and thalamus, used currently in the Knight modification - interruption of the substantia innominata fibres directly under the head of the caudate nucleus. In the largest study group, 1300 patients achieved about 40-60% success rate depending on the present condition (33-50% among OCD patients, 25-63% in anxiety patients and 68% % in affective disorders). [4] Capsulotomy is also one of the most effective ablative treatments, used to treat obsessive compulsive disorder and chronic anxiety states, which consists in breaking the connections in the anterior limb of the internal capsule (thalamocortical fibres) [5]. Response to treatment ranges from 48 to 78%. Stimulation therapy consists of Deep Brain Stimunaltion - DBS. DBS is a type of treatment which stimulates brain structures responsible for motor disorders in mental illnesses using a special device called a "brain pacemaker." The operation consists of placing the lead to a specific structure in the brain and the generator, which is most often located in the subclavian fossa, and is responsible for stimulating specific areas of the brain. [6] Since 2002, it is one of the latest treatments for Parkinson's disease, recently also experimentally used in the Tourette syndrome [7].

Objectives

The purpose of this study is to present ethical dilemmas related to psychosurgery.

Methods

Significant articles on ethical problems of psychopsychiatry have been analyzed.

Among the 261 articles related to the ethics of psychosurgery for analysis 14 significant articles were selected .

Results

The history of ethical dilemmas

From the very beginning psychosurgery faced ethical dilemmas, which tended to grow as the development of the field was progressing. The true fusion of neurosurgery and psychiatry was created by Egas Moniz and Almeida Lima in the 1940s - pioneers of leukotomy, an attempt to destroy the connections of frontal cortex with other brain structures, mainly thalamocortical fibers [8] Clinical improvement has been achieved in most cases in patients with anxiety, depression and psychosis, but not without consequences for other aspects of health of the patient. The positive reception of Moniz and Lima's results by the medical community was primarily due to very favoring positive aspects of the outcome method, with photographs of patients before and after surgery that showed significant changes in their facial expression and general state. Families of patients and patients themselves did not recognize many of the postoperative symptoms as side effects of the treatment - as stated by Moniz, dizziness, disturbed concentration and "childlike" behavior were not complications, but the natural and transient symptoms of a cured psyche. [9]

The neurosurgerons of the New World couldn’t remain indifferent to the success of the European continent - doctors Walter Freeman and James Watts were responsible for creation of prefrontal lobotomy, at that time the most successful in the United States in the 1950s weapon to fight the post-traumatic stress disorder in American War veterans. [10] Unfortunately, the procedure not only brought more postoperative complications and increased mortality as its European variant, but also the introduction of the era of transorbital prefrontal lobotomy was associated with numerous serious ethical and medical deontology failures. Attempts to disseminate the method to be performed not only by surgeons but also by doctors of other specialties and - at its climax - even people without medical preparation, led to the condemnation of leukotomy and recognition of it as illegal mean in some states. Finally, the inventor Freeman himself lost the right to perform surgeries in 1967 after another fatal operation on Helen Mortensen, a long-standing patient of three lobotomies, who died of an intracerebral haemorrhage, induced iatrogenically during the procedure. [11]

Constant controversy of the moral-ethical and medical nature led to the discontinuation of psychosurgical procedures, with the introduction of chlorpromazine for psychiatric treatment in 1954 a new era of pharmacotherapy began, where neurosurgical treatment was treated as a last resort. Currently, due to the awareness of the limitations of non-invasive methods of psychiatric treatment as well as the introduction of modern safer neurosurgery techniques, psychosurgery returns to the medical arsenal in the fight against mental disorders.

Modern psychosurgery dilemmas

Informed consent and basic principles of medical ethics

Among ethical dilemmas in psychosurgery, the importance of basic norms and ethical principles shall be emphasized, since that may be disproportionate in psychiatric cases. The first and foremost dilemma is respect for patient autonomy and obtaining informed consent, which is a common problem in most psychiatric disorders. The willingness to use experimental methods by the health care provider should not create the feeling n the patient that this is the only available form of treatment, and that despite the longer and tougher way of treatment with pharmacotherapy and psychotherapy, the patient should choose the faster but also a higher risk method, such as neurosurgery. [12;13] In addition, the importance of finding a balance in medicine between beneficience and non-maleficience is controversial due to numerous postoperative complications, such as speech disturbances (10.8-33%), memory impairment (up to 20%), depression (up to 25%), and increased suicide risk. [14]

Increased will in psychiatric patients?

The inglorious beginnings of psychosurgery brought moral dilemmas concerned more of the correctness of ethical procedures performed in terms of the lack of complete knowledge of the pathomechanisms of mental illness, or the performance of the incompetent staff. So much nowadays ethical considerations also apply to the positive impact of psychosurgery in patients suffering from obsessive-compulsive disorder and suffering from addiction. Psychosurgery most probably reduces the intensity of the coded previously in the ventromedial prefrontal cortex scheme of geared or compulsions for obtaining an addictive substance [15;16]. At the same time it modulates the calculation of equity strategy currently used by behavioral modification pulsed in frontal part of cingulate cortex. It encodes the feeling of pleasure, and suppresses the subsequent passage of the same stimulus, thus reducing the reactions similar to those of OCD and addictions dependence. Consequently, from the point of view of subjective probability, these changes allow the patient to self-alternative usage of behavioral strategies, increasing flexibility in decision-making - thereby increasing the possibility of his "free will". [17]

Changing behavior in aggressive patients and psychopathic disorders

In the history of psychosurgery, there are also medical considerations not only to relieve the suffering of psychiatric patients but also to deliberately alter behavior in aggressive patients. The most famous case in history was the lobotomy of Evita Peron, the first lady of Argentina who had undergone lobotomy, as her primary cause to relieve the pain of the cervical cancer relapse, the second most important reason was the "modification" of aggressive behavior and the desire to remove her husband's opponents using military force. [18]

Behavior modification considerations play an important part in the "treatment" of sociopathy, specifically APDII, where pharmacological, psychotherapeutic, and hypnosis options currently fail to cure the patients. [19] In this case, psychosurgery offers three basic treatments, namely, the first of which is ablative neurosurgical treatment (stereotactic amygdalotomy, hypothalatomy in the treatment of severe aggressive disorders, aggressive sexual behavior) which come with high mortality in contrast to DBS stimulating the limbic system, affecting intermittent explosive disorder and severe addiction cases, which more likely predispose to aggressive disorders. Unfortunately, DBS comes also with significant mortality rate of up to 0.4% and the presence of other iatrogenic diseases. The experimental third new method is invasive or non-invasive neuromodulation of the frontal cortex, using stimulation by tDCS and TMS, which may be the treatment of the future. [20;21] However, as in other psychosurgical cases, the discussion of the ethics of the above actions, also in the context of patients - prisoners on which experiments should not be conducted, is a pool of further ethical dilemmas for modern medicine.

Conclusions

Psychosurgery is one of the methods of treating specific drug-resistant psychiatric disorders, for which it usually remains a last resort. Due to the interference not only with the symptoms but also with the whole of the human psyche, and the possibility of inducing permanent iatrogenic complications that permanently reduce the quality of life of patients is considered a method including numerous ethical dilemmas, where the solution should be based on the principles of respect for the patient's dignity, autonomy and bring benefits which outweigh the possible side effects.

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