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REVIEW ARTICLE

The role of bioethics in the neurosurgical treatment of psychiatric disorders

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Abstract Psychiatric neurosurgery or psychosurgery remains as an alternative for treatment of psychiatric disorders. However, its historical antecedents, the vulnerable specific condition of psychiatric patients, the high cost of instrumentation and the ethic dilemma about the autonomy of subjects whose are candidates to this kind of procedures condition to get a interdisciplinary and specialized staff and at less supervision for ethic local committee. There are ablative or deep brain stimulation procedures accepted as compassionate or investigational use. Into systematic review four International Ethic Guides are accepted for the indication, the implantation and the follow up of these treatments. 24 bioethics essays were found them and 9 ethics specific dilemmas were published. Expectancy and development of this medical issue are inherent to financial or biotechnological aspects, consequently is important to promote a scientific and philosophical discussion.

PALABRAS CLAVE
Bioética;
Neurocirugía Psiquiátrica;
Psicocirugía;
neurocirugía estereotáctica

El papel de la bioética en tratamiento neuroquirúrgico de los desórdenes psiquiátricos

Resumen La neurocirugía psiquiátrica ó psicocirugía continúa siendo una alternativa de tratamiento para las enfermedades psiquiátricas. Sin embargo, sus antecedentes históricos, el estar dirigida a una población vulnerable, los altos costos de instrumentación y el dilema sobre la autonomía del sujeto a decidir sobre este tipo de cirugía, condicionan a que estos casos sean abordados por equipos interdisciplinarios, altamente especializados y al menos bajo la supervisión del Comité de Etica de la institución donde se realicen. Existen procedimientos ablativos

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y por estimulación eléctrica cerebral profunda, los primeros aceptados como tratamiento de uso compasivo y los segundos se encuentran en fase de investigación. En la revisisón sistemática existen 4 guías éticas internacionales aceptadas respecto a la indicación, la aplicación y el seguimiento de estos tratamientos. 24 ensayos éticos fueron encontrados y 9 dilemas éticos fueron publicados. Las expectativas y el desarrollo de esta rama médica están inherentemente ligadas a la aplicación tecnológica, así como a los aspectos financieros, por lo que es importante desarrollar una discusión científica y filosófica del tema.

Introduction

Neurosurgery has been applied as a treatment to solve psychiatric disorders since the beginning of the past century. In its origins, this chapter of neurological surgery was denominated as *Psychosurgery*, today this term has been replaced by *Psychiatric Neurosurgery* or *Neurosurgery for Mental Disorders*; however, they still handle differently. Why is neurosurgery considered as an alternative in the treatment of mental disorders? Fundamentally because of four reasons: The high prevalence of psychiatric diseases and their social repercussions,[1–5,8] the existence of a group of patients refractory or hard to control with conventional methods whether adjuvant pharmacologic or therapeutic (physical or psycodynamical),[1,6–13] the abundance of information regarding the physiopathologic brain substrate of mental disorders and the remarkable technological development that has transformed neurosurgery in a safer and more precise speciality. However, neurosurgery for mental disorders must be revised from the ethical and moral perspective. In this essay we will evaluate some ethical and legal considerations regarding the use of psychiatric neurosurgery.

Historical background

Psychosurgery was defined by the World Health Organization as: ''The selective surgical resection or destruction of the neural pathways or normal brain tissue, in order to modify the behaviour''.[14] Neurosurgery for the treatment of psychiatric diseases might be one of the most controverted scientific activities of the twentieth century. In the beginning of humanity, trephine (based in mystical and magical aspect rather than scientific) was the first attempt of surgical treatment for psychiatric disorders. Later on, in the anecdotic case of Phineas Cage, clinically described by John Harlow in 1860, demonstrated that lesions of the frontal structures produced disinhibition of social learned conducts.[15] Because of the absence of psychopharmacological treatments, in 1888, Gottlieb Burckhardt a Swiss psychiatrist performed the first surgical procedures in psychiatric patients with the anatomic and physiologic theories of that time. Burckhardt treated patients with behaviour alterations, ''eliminating or diminishing'' the areas of brain with pathologic behaviour. On December 29 of 1888, he performed the first topectomy and in 1891 published his experience with six patients described as demented and aggressive, mentioning three important successes, two partial results and a failure that led to the patients' death.[16]

At the start of the twentieth century, the psychiatric effects induced by injuries in the frontal lobes on wounded soldiers of the First World War revealed new information. In 1935 Fulton and Jacobsen, presented, in the Second World Congress of Neurology in London, their works performed on chimpanzees, detailing the changes on behaviour after frontal lobectomy. These experimental findings on non-human primates encouraged the possibility to influence, via surgical procedures, the control of psychiatric disorders.[17]

Thus, the series of events that led to the massive development and use of psychiatric neurosurgery, during the fifties, cannot be appreciated without the comprehension of the political and social environment that surrounded the psychiatric disease at the start of the century. Psychiatrics and neurologists were the responsible for taking care of these patients. The number of psychiatric patients incremented according to the population growth and these patients were secluded on mental institutions and asylums. It must be noted that the debate between Sigmund Freud against the functional approach that Emil Kraeplin presented, regarding mental disorders, induced psychiatrists to become independent from the medical branch, which explains why neurologists involved themselves more in the diagnosis and treatment of patients with mental diseases. In fact, neurologists rather than psychiatrists were the ones who became the strongest supporters of psychosurgery, given that, generally, the patients from that time received years of psychotherapeutic treatment and ''somatic therapies'' (such as induced coma, by insulin or metrazol, and electroconvulsive therapy), without achieving the adequate therapeutic effects nor social readjustment.[13]

Properly speaking, it was Egas Moniz who ''started'' psychosurgery on humans when he proposed to the scientific community the surgical interruption of the front-thalamic tract a cross of bifrontal burr holes. Egas Moniz and Almeida Lima performed more than 100 prefrontal leucotomies and despite their data never being systematized nor having any clinical follow up, in 1949 he received the Nobel Prize in Physiology and Medicine for his work ''Prefrontal