PSYCHOSURGERY OR PSYCHO SURGERY?

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Introduction

Editorial

Whereas neurosurgery primarily deals with diseases of the central and peripheral nervous system, psychosurgery or 'functional surgery for psychiatric disease' aims to treat or alleviate mental illness. The latter discipline has a complex and controversial history, during which medical successes were alternated with fatal mistakes. Psychosurgery has definitely known some remarkable and obscure byways that are unimaginable nowadays.

The history of psychosurgery goes back to prehistory and has been comprehensively described. The pioneers who played a key role in advancing the field all believed in the central idea that destruction or modification of the brain areas involved in emotional and cognitive aspects of mental illness could alleviate the symptoms observed [1]. The surgical procedures that are currently employed for psychiatric disease, are indicated for – often refractory – affective and anxiety disorders such as depression and OCD, rather than cognitive disorders (e.g. schizophrenia) [2]. Nowadays, the field is strictly regulated by ethical guidelines. This makes it hard to believe its controversial applications in the past, which sometimes crossed medical and scientific borders.

Between 1962 and 1979 in West Germany, surgical hypothalamotomies were carried out to treat 'sexually deviant patients', such as pedophiles and exhibitionists. Patients might, however, not be the proper description: half of the so-called patients of Roeder and colleagues [3], who performed stereotaxic ablation of the ventromedial hypothalamic nucleus, was homosexual. Homosexuality was considered a mental disorder until 1973. Nevertheless, the surgical procedure was successful in reducing sexual drive [4]. These observations were corroborated by Schmidt and Schorsch, who evaluated the results of 75 patients who had received ventromedial hypothalamotomy. These subjects were imprisoned after having been accused of sex offense and most of them were male. The theoretical foundation of the surgical procedure, however, was questionable and the effects were not properly reported, especially on the long term [5]. Subsequently, psychosurgery of sex offenders became a big political issue in Germany. It was heavily criticized and finally abandoned [4]. Long-term follow-up studies on the satisfaction of the operated subjects were conducted in later times (1989 [6] and 2003 [7]), which reported surprisingly positive outcomes. However,these publications were never formally peer-reviewed.

Another remarkable story in the history of psychosurgery was an experiment by Jose Delgado in 1965, who implanted a stimoceiver – a remotely controllable brain electrode invented by Delgado himself – in the caudate nucleus of a bull's brain. He stepped in the Cordoba bull ring and managed to stop the charging bull. The caudate nucleus is involved in controlling voluntary movements and using the stimoceiver, Delgado claimed to have tempered the bull's aggressive instinct. The Spanish physician experimented with electrical stimulation on cats, monkeys and patients and promoted the idea of psychocivilizing society using psychosurgery, as illustrated in his book Physical Control of the Mind: Toward a Psychocivilized Society [8]. In the same era, Mark and Ervin published a book called Violence and the brain, in which they suggested the use of neurosurgical procedures as a method to suppress the violent behaviour observed in society [9]. This idea was almost realized in the case of one prisoner whom was offered an experimental operation on his brain that would reduce his aggression. The surgical procedure was prevented and rejected in the end, because voluntary consent of the patient was virtually impossible in this setting [10]. The aforementioned events eventually led to an ethical evaluation of psychosurgical procedures by the National Commission for the Protection of Human Subjects of Biomedical Behavioral Research [11]. Against public expectations, psychosurgery was not fully banned and its use as a treatment of last resort – but not for application in minors, prisoners or individuals incapable of giving informed consent – was encouraged [12].

Obviously, the seemingly barbaric events discussed above should be viewed in their historical context, in which pharmacological therapies did not seem efficacious, detailed knowledge on brain function was limited and non-invasive alternatives had not yet been developed. Nowadays, less invasive and more targeted strategies, such as transcranial magnetic stimulation, vagal nerve and deep brain stimulation, gene therapy and stem cell therapy are promising alternatives. Furthermore, the clinical use of neurosurgical procedures for psychiatric disease is strictly regulated. For instance, it is only meant for patients who do not respond to pharmacologic, psychotherapeutic or electroconvulsive therapies and should be supported by both the patient's psychiatrist and the patient's family [2]. Conclusively, the psychosurgery will always remain a controversial subject. It might keep pushing the boundaries of what is acceptable and what is not in a direction that will be shaped by the passing of time as well as the available technologies.

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