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Press release

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04/04/2012
http://idw-online.de/en/news471185

Research results, Scientific Publications
Medicine
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Therapeutic approach for patients with severe depression

Brain pacemakers have a long-term effect in patients with the most severe depression. This has now been proven by scientists from the Bonn University Medical Center. Eleven patients took part in the study over a period of two to five years. A lasting reduction in symptoms of more than 50% was seen in nearly half of the subjects. A new perspective is thus opened for people with the most severe depression who do not respond to any other therapy. The results are now being presented in the current edition of the journal "Neuropsychopharmacology."

People with severe depression are constantly despondent, lacking in drive, withdrawn and no longer feel joy. Most suffer from anxiety and the desire to take their own life. Approximately one out of every five people in Germany suffers from depression in the course of his/her life – sometimes resulting in suicide. People with depression are frequently treated with psychotherapy and medication. "However, many patients are not helped by any therapy," says Prof. Dr. Thomas E. Schläpfer from the Bonn University Medical Center for Psychiatry and Psychotherapy. "Many spend more than ten years in bed – not because they are tired, but because they have no drive at all and they are unable to get up."

One possible alternative is "deep brain stimulation," in which electrodes are implanted in the patient's brain. The target point is the nucleus accumbens - an area of the brain known as the gratification center. There, a weak electrical current stimulates the nerve cells. Brain pacemakers of this type are often used today by neurosurgeons and neurologists to treat ongoing muscle tremors in Parkinson's disease.

A 2009 study proved an antidepressive effect

In 2009, the Bonn scientists were able to establish that brain pacemakers also demonstrate an effect in the most severely depressed patients. Ten subjects who underwent implantation of electrodes in the nucleus accumbens all experienced relief of symptoms. Half of the subjects had a particularly noticeable response to the stimulation by the electrodes.

"In the current study, we investigated whether these effects last over the long term or whether the effects of the deep brain stimulation gradually weaken in patients," says Prof. Schläpfer. There are always relapses in the case of psychotherapy or drug treatment. Many patients had already undergone up to 60 treatments with psychotherapy, medications and electroconvulsive therapy, to no avail. "By contrast, in the case of deep brain stimulation, the clinical improvement continues steadily for many years." The scientists observed a total of eleven patients over a period of two to five years. "Those who initially responded to the deep brain stimulation are still responding to it even today," says the Bonn psychiatrist, summarizing the results. During the study, one patient committed suicide. "That is very unfortunate," says Prof. Schläpfer. "However, this cannot always be prevented in the case of patients with very severe depression."

The current study shows that the positive effects last for years

Even after a short amount of time, the study participants demonstrated an improvement in symptoms. “The intensity of the anxiety symptoms decreased and the subjects’ drive improved,” reports the psychiatrist. “After many years of illness, some were even able to work again.“ With the current publication, the scientists have now demonstrated that the positive effects do not decrease over a longer period of time. “An improvement in symptoms was recorded for all subjects; for nearly half of the subjects, the extent of the symptoms was more than 50 percent below that of the baseline, even years after the start of treatment,” says Prof. Schläpfer. “There were no serious adverse effects of the therapy recorded.”

The long-term effect is now confirmed with the current study. How precisely the electrical stimulation is able to alter the function of the nucleus accumbens is not yet known. “Research is still needed in this area,” says Prof. Schläpfer. “Using imaging techniques, it was proven that the electrodes actually activate the nucleus accumbens.” The deep brain stimulation method may signify hope for people who suffer from the most severe forms of depressive diseases. “However, it will still take quite a bit of time before this therapeutic method becomes a part of standard clinical practice,” says the Bonn scientist.

Publication: Long-term Effects of Nucleus Accumbens Deep Brain Stimulation in Treatment Resistant Depression – Evidence for Sustained Efficacy, Neuropsychopharmacology, DOI: 10.1038/npp.2012.44

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