Study suggests new treatment for impulsivity in some dementia patients

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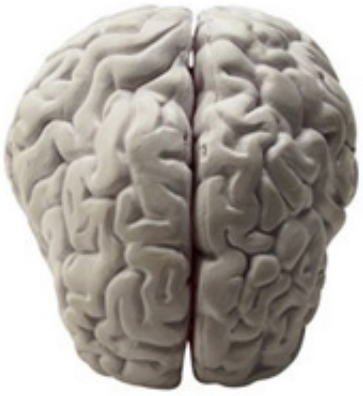

Restoring the low levels of the chemical serotonin may help improve brain function and reduce impulsivity in some dementia patients, according to Cambridge researchers. A study published in the July edition of the journal *Brain* suggests a potential new treatment for people affected by frontotemporal dementia.

Around 16,000 people in the UK are estimated to be affected by frontotemporal dementia (also known as Pick's disease). Patients are often affected at a young age, 50-65 years old. The disease affects the frontal and temporal lobes of the brain, at the front with both shrinkage and loss of important brain chemicals like serotonin. As a result, symptoms of frontotemporal dementia include changes in personality

and behaviour, and difficulties with language.

One of the key symptoms is disinhibition – impulsivity and impetuous behaviour. This is partly a result of a deficiency in serotonin, an important chemical within the brain which is responsible for maintaining normal behaviour as well as mood.

A team led by Dr James Rowe from the University of Cambridge and the Medical Research Council (MRC) Cognition and Brain Sciences Unit at Cambridge looked at whether citalopram, a commonly-prescribed antidepressant, might restore the brain function – and potentially alleviate the symptoms of disinhibition. Citalopram is known to restore levels of serotonin, even in patients who do not have depression; this increase in serotonin helps the brain activity needed make decisions about what to do, and what not to do.

The researchers examined the brain activity associated with disinhibition in patients and healthy volunteers. The patients received either a dose of citalopram or a placebo, in a double-blinded placebo-controlled trial. Participants took part in a 'Go-NoGo' task whilst their brain activity was monitored using a combination of magnetoencephalography (MEG) and electroencephalography (EEG). In the task, the volunteers needed to intermittently hold back from a habitual action, choosing to press or not to press buttons.

As expected, patients with frontotemporal dementia made many errors on the task, with difficulty holding back from actions. The performance on the task was closely related to their everyday impulsive and disinhibited behaviours. Compared to the placebo, citalopram boosted activity in the dementia patients in their right inferior frontal gyrus, a critical region of the brain for controlling our behaviour, even though this part of the brain was shrunken by the disease.

Dr Laura Hughes from the University of Cambridge and the MRC Cognition and Brain Sciences Unit, first author on the study, says: "This is a very promising result, which builds on a lot of basic laboratory science here in Cambridge. It suggests that it may be possible to treat patients safely and effectively for high risk and challenging impulsive behaviours, although more work is needed to identify those who are most likely to benefit from this type of drug."

More information: "Improving response inhibition systems in frontotemporal dementia with citalopram." DOI: dx.doi.org/10.1093/brain/awv133

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