

Discover

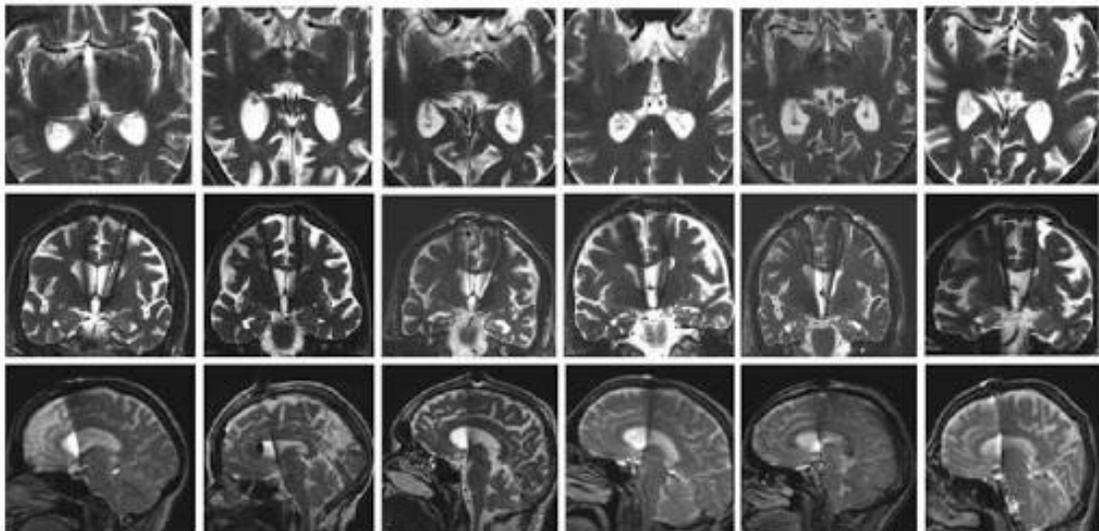
SCIENCE FOR THE CURIOUS



Neuroskeptic

Zapping Memory Better in Alzheimer's

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Now Toronto neurologists Laxton et al have tried to use deep brain stimulation (DBS) to **improve** memory in people with Alzheimer's disease. Progressive loss of memory is the best-known symptom of this disorder, and while **some drugs** are available, they provide partial relief at best.

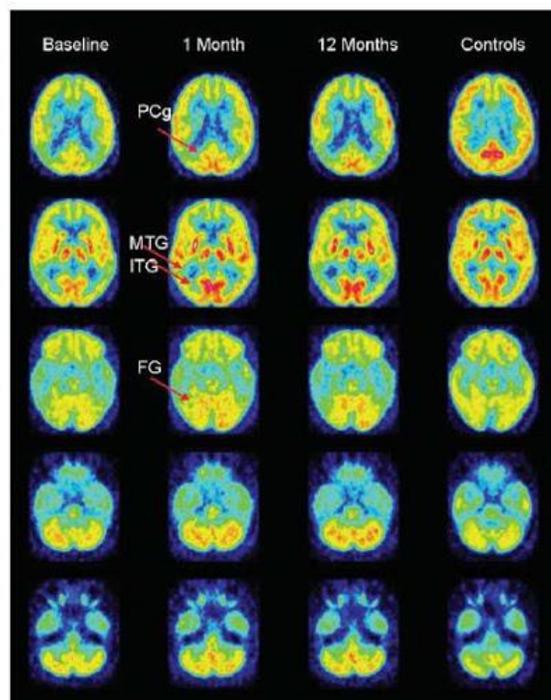
This study stems from a chance discovery by the same Toronto group. In 2008, they **reported that** stimulation of the **hypothalamus** caused vivid memory recollections a 50 year old man. In that case, the effect was entirely unintended and unexpected. The patient was being given DBS to try to curb his appetite (he weighed 420 pounds.) The hypothalamus is involved in regulating appetite, not memory – but the **fornix**, a nerve bundle that passes through that area, is. It's the main pathway connecting the hippocampus to the rest of the brain, and the hippocampus is **vital for memory**.

In this new study, Laxton et al implanted electrodes to stimulate the fornix in 6 patients with mild (early-stage) Alzheimer's. What happened? The results, unfortunately, were quite messy. On average, the patients symptoms got worse over the course of the year. Alzheimer's is a progressive degenerative disease, so this is what you'd expect to happen without treatment. The authors say that the decline was a bit slower than you'd expect in these kinds of patients, but to be honest, it's impossible to tell because there was no control group.

However, two patients did show memory improvements, and these were the same two who reported vivid recollections when the electrodes were first implanted (similar to the original obese guy):

Two of the 6 patients reported stimulation induced experiential phenomena. Patient 2 reported having the sensation of being in her garden, tending to the plants on a sunny day... Patient 4 reported having the memory of being fishing on a boat on a wavy blue colored lake with his sons and catching a large green and white fish. On later questioning in both patients, these events were autobiographical, had actually occurred in the past, and were accurately reported according to the patient's spouse.

Also, the stimulation caused brain activation, generally switching "on" the areas that are turned "off" in Alzheimer's, and this lasted for a year (the length of the study so far). And there were no major side-effects. That's all good.



Overall, these results are extremely interesting, but we don't know how well the treatment really works, and we won't know until someone does a randomized controlled trial with a longer follow-up period; something which is, unfortunately, true of a lot of the latest DBS studies.