



Vegetative state patients can respond to questions

By Fergus Walsh
Medical correspondent, BBC News

Scientists have been able to reach into the mind of a brain-damaged man and communicate with his thoughts.

The research, carried out in the UK and Belgium, involved a new brain scanning method.

Awareness was detected in three other patients previously diagnosed as being in a vegetative state.

Dr Adrian Owen, co-author of the research: "This changes things"

The study in the New England Journal of Medicine shows that scans can detect signs of awareness in patients thought to be closed off from the world.

Patients in a vegetative state are awake, not in a coma, but have no awareness because of severe brain damage.

Scanning technique

The scientists used functional magnetic resonance imaging (fMRI) which shows brain activity in real time.

They asked patients and healthy volunteers to imagine playing tennis while they were being scanned.

In each of the volunteers this stimulated activity in the pre-motor cortex, part of the brain which deals with movement.

This also happened in four out of 23 of the patients presumed to be in a vegetative state.

I volunteered to test out the scanning technique.

I gave the scientists two women's names, one of which was my mother's.

I imagined playing tennis when they said the right name, and within a minute they had worked out her name.

The BBC's Fergus Walsh tests the new brain scanning technique

They were also able to guess correctly whether I had children.

Questions

This is a continuation of research published three years ago, when the team used the same technique to establish initial contact with a patient diagnosed as vegetative.

But this time they went further.

With one patient - a Belgian man injured in a traffic accident seven years ago - they asked a series of questions.

He was able to communicate "yes" and "no" using just his thoughts.

The team told him to use "motor" imagery like a tennis match to indicate "yes" and "spatial" imagery like thinking about roaming the streets for a "no".

The patient responded accurately to five out of six autobiographical questions posed by the scientists.

For example, he confirmed that his father's name was Alexander.

The study involved scientists from the Medical Research Council (MRC), the Wolfson Brain Imaging Centre in Cambridge and a Belgian team at the University of Liege.

Dr Adrian Owen from the MRC in Cambridge co-authored the report:

"We were astonished when we saw the results of the patient's scan and that he was able to correctly answer the questions that were asked by simply changing his thoughts."

Dr Owen says this opens the way to involving such patients in their future treatment decisions: "You could ask if patients were in pain and if so prescribe painkillers and you could go on to ask them about their emotional state."

It does raise many ethical issues - for example - it is lawful to allow patients in a permanent vegetative state to die by withdrawing all treatment, but if a patient showed they could respond it would not be, even if they made it clear that was what they wanted.

The Royal Hospital for Neurodisability in London is a leading assessment and treatment centre for adults with brain injuries.

Helen Gill, a consultant in low awareness state, welcomed the new research but cautioned that it was still early days for the research: "It's very useful if you have a scan which can show some activity but you need a detailed sensory assessment as well.

"A lot of patients are slipping through the net and this adds another layer to ensure patients are assessed correctly."

She said the hospital did a study of 60 patients admitted with a diagnosis of vegetative state and 43% could communicate.

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