

Patient in a vegetative state 'talks' to scientists

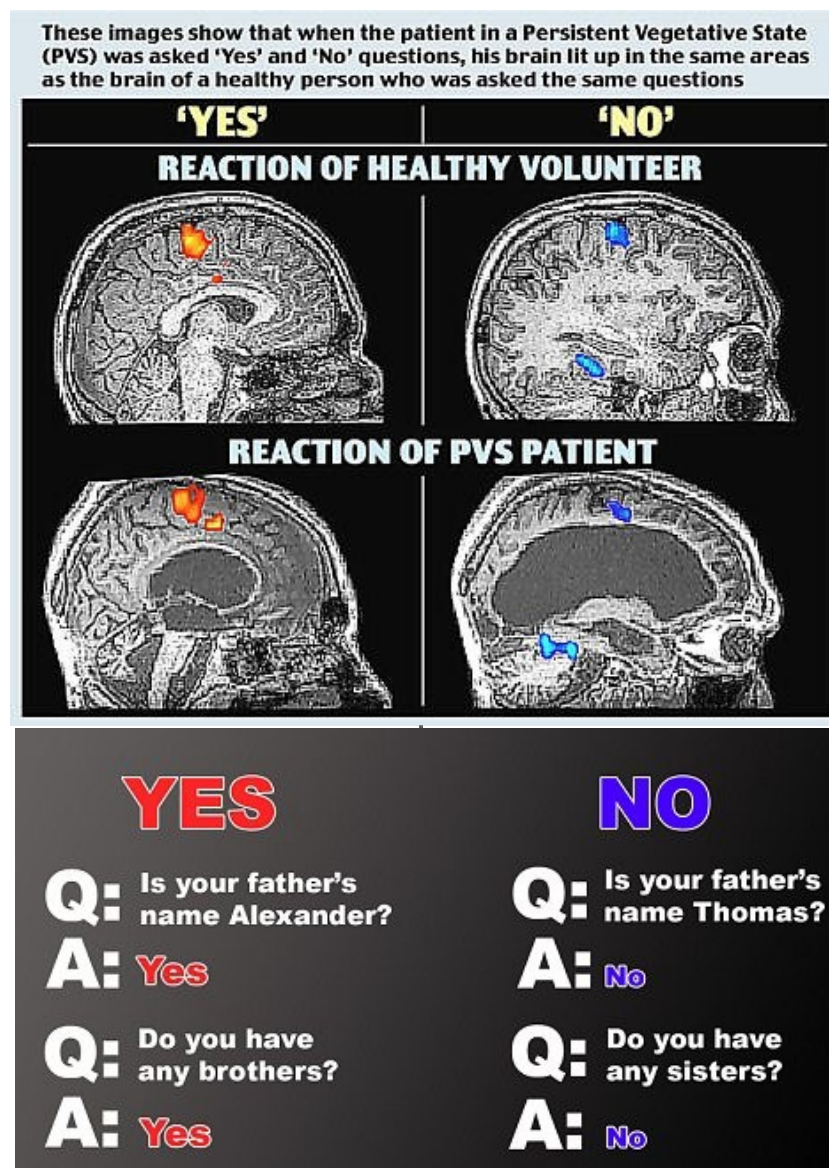
By Jenny Hope

Last updated at 2:06 PM on 04th February 2010

British scientists are hailing a world-first 'conversation' with a man diagnosed as being in a permanent vegetative state.

They say the breakthrough has enormous implications for the care and treatment of vegetative patients.

With the ability to communicate, patients could request pain relief, or even indicate if they wanted to end their life.



The answers that proved a road accident victim was not in a 'vegetative state' Dr Adrian Owen, who led the Medical Research Council team in Cambridge, said: 'They can now have some involvement in their destiny.'

To the outside world, the 29-year-old patient - who suffered a severe head injury in a road accident in 2003 - appeared unconscious and incapable of communicating.

But Dr Owen's team used a brain scanner to tap into his thoughts and monitor how he reacted to questions.

The man answered 'yes' or 'no' by conjuring up imaginary scenes that signalled a response.

Experts say the breakthrough 'changes everything' about classifying consciousness disorders.

The man was among 23 patients a control group of healthy volunteers recruited for a three-year study by Medical Research Council scientists and colleagues from the University of Liege in Belgium.

Functional magnetic resonance imaging (fMRI) was used to measure activity in two different brain regions registering motor and spatial responses while the patients imagined specific scenes.

Closed world: The patient was in a permanent vegetative state (posed by model)

Magnetic fields and radio waves detected blood-flow surges in each area which 'lit up' the scans.

For the 'motor' task, patients were asked to imagine standing on a tennis court and swinging an arm to return balls from an instructor.

To activate the 'spatial' region, they had to imagine walking from room to room in their home.

In four patients, the scans detected activity in the appropriate brain region as they carried out the scientists' verbal instructions.

But the 29-year-old man, who had produced reliable responses, was singled out for an even more remarkable test, says the New England Journal of Medicine.

Told to use 'motor' or 'spatial' imagery as 'yes' and 'no' answers, he correctly answered the first five of six autobiographical questions.

He was asked 'is your father's name Alexander?' and correctly answered 'yes' by imagining the tennis scene. When he was asked 'is your father's name Thomas?' he answered 'no' by thinking about walking around the house.

When the sixth question was asked, virtually no activity was seen. Scientists believe the patient had fallen asleep or simply failed to hear the question.

Dr Owen said: 'We were astonished when we saw the results of the patient's scan.'

'Not only did these scans tell us that the patient was not in a vegetative state, but, more importantly, for the first time in years it provided the patient with a way of communicating his thoughts to the outside world.'

He said fMRI scanning was an expensive tool but in future, computer devices might help patients to communicate whether they needed pain relief or would like to try new drugs.

He said: 'Just for patients to exercise some autonomy is a massive step forward.'

Dr Nicholas Schiff, a neuroscientist at the Weill Cornell College in New York, said the work 'changes everything'. He said: 'These findings have extremely broad implications for concerns about the accurate assessment of patients in custodial care situations.'

Chris Frith, Emeritus Professor of Neuropsychology, University College London, said: 'It is difficult to imagine a worse experience than to be a functioning mind trapped in a body over which you have absolutely no control.'

'We have the distinct possibility that, in the future, we will be able to detect cases of other patients who are conscious and what's more, we will be able to communicate with them.'

There are normally fewer than 100 patients in the UK in a permanent vegetative state (PVS) at any time. PVS is diagnosed in patients who have been in a coma for three years without being able to communicate or have any understanding of what is being said.