
Brain scan could diagnose autism early

Children could be screened for autism at an early age after scientists developed a way to recognise the condition using brain scans.

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Diagnosis of autism has always been difficult and often the condition is recognised at too late a stage for treatment to have a major effect.

But now researchers believe they have discovered a potential way of spotting the disorder in early infancy by scanning the brainwaves.

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They have discovered that children with autism spectrum disorders (ASD) recognise sound a fraction of a second slower (11 milliseconds) than unaffected children.

This is significant because it can be picked up by a brain scan and so become a standardised way to diagnose the condition.

Dr Timothy Roberts, the lead researcher at Children's Hospital in Philadelphia, said the scan could become the first "standard tool" for recognising autism.

His tests showed that the delay is present in children with autism aged 10 and if further tests prove the same is true in much younger children then it could lead to widespread screening.

"An 11-millisecond delay is brief, but it means, for instance, that a child with ASD, on hearing the word 'elephant' is still processing the 'el' sound while other children have moved on," he said.

"The delays may cascade as a conversation progresses, and the child may lag behind typically developing peers."

It is estimated that around one in 100 children between five-years-old and nine-years-old have autism, meaning there are around 500,000 in Britain.

The condition covers a wide spectrum of disorders with cases ranging from relatively mild problems with social interaction to more severe difficulties in behaviour such as not speaking, copying, rigid routines and social isolation.

While the causes of the condition remain a mystery, early and intensive treatment is known to help alleviate the symptoms.

The problem is that diagnosis can be difficult and often relies on waiting for the symptoms to develop by which time a lot of damage has been done.

In the current study, published in the journal *Autism Research*, Dr Roberts used a magnetoencephalography (MEG), a scanner that detects magnetic fields in the brain.

Using a helmet that surrounds the child's head, the team presents a series of recorded beeps, vowels and sentences. As the child's brain responds to each sound, non-invasive detectors in the MEG machine analyse the brain's changing magnetic fields.

The researchers compared 25 children with ASDs with an average age of 10 years to 17 age-matched typically developing children.

The children with ASDs had an average delay of 11 milliseconds (about 1/100 of a second) in their brain responses to sounds, compared to the control children.

Among the group with ASDs, the delays were similar, whether or not the children had language impairments.

The system may be able to diagnose ASDs as early as infancy, permitting possible earlier intervention with treatments.

They also may be able to differentiate types of ASDs such as classic autism and Asperger's syndrome in individual patients.

Autistic children who are taught intensively at home at the age of three can double their IQ within two years, it is believed.

Dr. Gina Gómez de la Cuesta, Action Research Leader at the National Autistic Society, said: "The initial findings of this small scale study are useful.

"Many children still have to wait years for a diagnosis and so without the right support this can have a profound effect on them and their families.

"Early diagnosis and intervention can make a huge difference to peoples' lives if the right environment, education and services can be put in place as soon as possible."

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