Brain abnormalities in infancy associated with autism in children born very preterm

Abnormalities picked up via magnetic resonance imaging (MRI) in the brains of premature babies have been identified in those who were later diagnosed with autism, research by Murdoch Childrens Research Institute has found.

In a world first researchers scanned the brains of very premature babies (those born before 30 weeks gestation or under 1250 grams birthweight) when they reached term equivalent age (40 weeks) and were later assessed for autism at seven years of age.

It is already known that survivors of very preterm birth are at increased risk of autism spectrum disorders (ASD) compared with term born children, although the rate is still low with only eight of 172 (4.5%) diagnosed with ASD at seven years old.

The study showed that these children tend to show slightly different brain structures early in infancy compared with those who did not have ASD, with increased likelihood of lesions in their white matter at 40 weeks and evidence of smaller cerebellar volumes.

“This study has provided an important step in identifying neonatal structural abnormalities that potentially underlie the development of ASD,” lead researcher Dr Alexandra Ure said.

“In particular, the results highlight reduced cerebellar volumes as a potential predictor of ASD in very premature children.”

Co-lead researcher A/Professor Peter Anderson said the findings have important clinical implications.

“These findings raise the possibility that early identification of infants with specific structural brain abnormalities may help increase opportunities for monitoring and early intervention.”

“ASD is often difficult to diagnose in children born very premature because of the overlapping of symptoms from other developmental impairments, which is why the identification of bio-markers for ASD is particularly vital in this group.”

The study is the first to report on neonatal brain imaging data in children subsequently diagnosed with ASD. The brain scans assessed the presence and severity of white matter, cortical grey matter, deep nuclear grey matter and cerebellar abnormalities, as well as measuring total and regional brain volumes.

The study was published in *Autism Research*.

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