

research snapshot

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How Does Very Preterm Birth Affect Brain Development?

What is this research about?

Children born between the 24th and 32nd week of pregnancy often have trouble with higher brain functions. Very preterm children have issues with visual abilities, attention, and problem solving. These problems are often present even when there are no issues with overall intelligence.

This study explores how the brain activity of children born very preterm is different from that of full-term children. The researchers are looking at brain rhythms, which are important for the development of mental abilities. As children develop, their brain rhythms become faster. The slowing of brain rhythms has been connected with a number of neurological and psychiatric conditions. This study used brain imaging tools to measure magnetic brain rhythms from outside the head in very preterm children, as well as full-term children.

What did the researchers do?

11 school-aged very preterm and 11 age-matched full-term were recruited as part of a longitudinal study. The 11 full-term were used as a control group. The children were given standardized intelligence tests for their age range. None of the children had any intellectual

What you need to know:

New technologies are helping to discover new information on how ASD affects the brain. New knowledge will create a better understanding of ASD, which will help with diagnosis and treatment.

or neurological impairment. The tests showed no significant difference between the 2 groups of children in terms of intelligence.

Magnetoencephalography (MEG) was recorded for each subject at rest (for example, when the subjects were lying quietly and just looking at a picture of a 'happy face'). The researchers used a 151-channel whole-head MEG system. Techniques were used to ensure that minimal head-movement occurred during the test.

What did the researchers find?

The researchers found a statistically significant difference between the dominant speeds of brain rhythms between the 2 groups of children. Very preterm children have slower brain rhythms, together with reduced strength of these brain rhythms. These findings shed new light on how brain activity underlying mental abilities is altered in children who are born very prematurely.

How can you use this research?

Treatment planning can improve when the reasons behind the cognitive problems of very preterm children are known.

Policy makers will use this knowledge to understand why ongoing support is important for children who were very preterm.

Medical staff will learn why targeted plans can lead to more positive outcomes for cognitive problems of very preterm children.

About the Researchers

Dr. Sam Doesburg is an MEG Clinical Associate and Scientist at the Hospital for Sick Children and an Assistant Professor at the University of Toronto.

sam.doesburg@sickkids.ca

Citation

Doesburg, S.M., Ribary, U., Herdman, A.T., Moiseev, A., Cheung, T., Miller, S.P., Poskitt, K.J., Weinberg, H., Whitfield, M.F., Synnes, A. and Grunau, R.E., 2011. Magnetoencephalography Reveals Slowing of Resting Peak Oscillatory Frequency in Children Born Very Preterm. *Pediatric Research*, 70 (2), pp. 171-175.

Available online at bit.ly/1mY5lyj

Keywords

Very preterm children, Thalamocortical system, Neural oscillation, Peak oscillatory frequencies

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KT@neurodevnet.ca

