Brain Volume Findings in Six Month Old Infants at High Familial Risk for Autism

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Previous Presentation: IMFAR 2011

Keywords: autism, child psychiatry
Acknowledgements

We wish to acknowledge the work of SunHyung Kim, Rachel Gimpel Smith, Michael Graves, and Ryan Scotton for their assistance in processing this data and to Penelope Kostopoulus and Samir Das for their assistance with database management. Most importantly, we extend our sincere appreciation to the families who have participated in this study.

This work was supported by an NIH Autism Center of Excellence grant (NIMH and NICHD #HD055741 to J. Piven) and funding in support of this work from Autism Speaks and the Simons Foundation. Further support was provided by the National Alliance for Medical Image Computing (NA-MIC), funded by the NIH through grant U54 EB005149.

ABSTRACT

Objective: Brain enlargement has been observed in individuals with autism as early as two years of age. Studies using head circumference suggest that brain enlargement is a postnatal event that occurs around the latter part of the first year. To date, no brain imaging studies have systematically examined the period prior to age two. In this study we examine MRI brain volume in six month olds at high familial risk for autism.

Method: The Infant Brain Imaging Study (IBIS) is a longitudinal imaging study of infants at high risk for autism. This cross-sectional analysis examines brain volumes at six months of age, in high risk infants (N=98) in comparison to infants without family members with autism (low risk) (N=36). MRI scans are also examined for radiologic abnormalities.

Results: No group differences were observed for intracranial cerebrum, cerebellum, lateral ventricle volumes, or head circumference.

Conclusions: We did not observe significant group differences for head circumference, brain volume, or abnormalities of radiologic findings in a sample of 6 month old infants at high-risk for autism. We are unable to conclude that these changes are not present in infants who later go on to receive a diagnosis of autism, but rather that they were not detected in a large group at high familial risk. Future longitudinal studies of the IBIS sample will examine whether brain volume may differ in those infants who go onto develop autism, estimating that approximately 20% of this sample may be diagnosed with an autism spectrum disorder at age two.