



Autism linked to increased cerebrospinal fluid in infants

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March 6 (UPI) -- Researchers at the University of North Carolina have found a link between increased levels of cerebrospinal fluid in the brains of infants and a higher risk for autism spectrum disorder.

Cerebrospinal fluid, or CSF, is the protective layer of fluid that provides cushion between the brain and skull. Scientists recently discovered CSF acts as a filtration system for byproducts of brain metabolism.

The study found toddlers diagnosed with autism at age 2 had a significantly greater amount of CSF at age 6- and 12-months identified based on MRI scans.

"The CSF is easy to see on standard MRIs and points to a potential biomarker of autism before symptoms appear years later," Dr. Joseph Piven, director of the Carolina Institute for Developmental Disabilities at the University of North Carolina and co-senior author of the study, [said in a press release](#). "We also think this finding provides a potential therapeutic target for a subset of people with autism."

The CSF filters out the byproducts of brain metabolism, or brain cells communicating with each other, and the CSF is itself replenished four times per day.

"We know that CSF is very important for brain health, and our data suggest that in this large subset of kids, the fluid is not flowing properly," said Dr. Mark Shen, a postdoctoral fellow and first author of the study. "We don't expect there's a single mechanism that explains the cause of the condition for every child. But we think improper CSF flow could be one important mechanism."

The study included 343 infants, 221 were at high risk of developing autism because they had an older sibling with autism. Of these infants, 47 were diagnosed with autism at age 24 months. The infants later diagnosed with autism had 18 percent more CSF at 6-months-old than those not diagnosed with autism, the researchers report.

Infants with 24 percent more CSF at 6-months than children who were not later diagnosed went on to develop severe autism, the researchers said. Researchers also found that the increased amounts of CSF were also linked to poor gross motor skills.

"Normally, autism is diagnosed when the child is two or three years old and beginning to show behavioral symptoms; there are currently no early biological markers," David G. Amaral, director of research at the UC Davis MIND Institute. "That there's an alteration in the distribution of cerebrospinal fluid that we can see on MRIs as early as six months is a major finding."

Increased CSF predicted which babies would later be diagnosed with autism with almost 70 percent accuracy.

The study is [published in Biological Psychiatry](#).

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