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Inflammation in brain tissue a possible clue to autism

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According to new research the common medical belief that young children with autism have accelerated brain growth is not the case even though their brains may appear enlarged.

The results of a study by researchers at the [University of Washington School of Medicine](#), has found that the abnormality seen in the brains of autistic children in magnetic resonance imaging (MRI) scans is clearly not because of accelerated brain growth.

The findings while they confirm some earlier reports also conflict with others.

Dr. Stephen Dager and his colleagues compared 60 autistic children to 16 children with developmental delay and 10 children with typical development by using MRI scans to measure how much water was moving around inside the brain tissue, which gives clinicians an indirect measure of brain maturation.

The researchers found the autistic children had differences in the gray matter of their brains compared to the children with typical development.

A number of earlier studies have suggested the brains of younger children with autism are 10 percent larger, but Dager says their research focussed on tissue chemistry and found the abnormality wasn't due to lack of "pruning," which is how the normal developing brain rids itself of unnecessary neurons.

Dager suggests an alternative hypothesis could be an inflammatory process.

He says that would be consistent with adult studies that found higher levels of cytokines, associated with inflammation, in postmortem studies.

The popular theory that autistic children experience a more rapid brain growth that plateaus out at the age of 5 or 6 was not evident and in fact says Dager the opposite appeared to be true.

Dager says the processes that go hand in hand with brain maturation were slower in the autistic brains, particularly in gray matter.

Experts in the field say the findings are interesting and support other studies which suggest that autism could be a premature development leading to disorganized circuitry so that synaptic pruning didn't occur, and noise became predominant over signal itself.

But Dager's study suggests gray matter development in autism involves the same volume as normal brains, but fewer neurons and that gray matter abnormality could be inflammatory.

He says the scans appear to suggest there is more water in autistic children's brains.

This differences in gray matter was found only in the brains of autistic children, while both gray and white matter differences were found in the brains of children with learning delays.

For children with learning delays, the findings suggest slowed neuronal development is to blame.

Gray matter consists of the brain's neurons, while white matter is the brain's wiring system.

According to a recent study from the U.S. Centers for Disease Control and Prevention, autism affects up to one in every 175 school-age children and boys are nearly four times more likely to be diagnosed with autism than girls.

The study is published in the Aug. 22 issue of [Neurology](#).