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Study shows that autistic children have much more nerve cells

Rupali Gupta · Sunday, November 13th, 2011

Researchers have found that autistic children have much more nerve cells than children without autism in a part of the brain known as the prefrontal cortex which is involved in processing social skills.

Autism

Autism is a disorder of neural development characterized by impaired social interaction and communication, and by restricted and repetitive behavior. These signs all begin before a child is three years old. Autism affects information processing in the brain by altering how nerve cells and their synapses connect and organize; how this occurs is not well understood.

Parents usually notice signs in the first two years of their child's life. The signs usually develop gradually, but some autistic children first develop more normally and then regress. About a third to a half of individuals with autism do not develop enough natural speech to meet their daily communication needs. Differences in communication may be present from the first year of life, and may include delayed onset of babbling, unusual gestures, diminished responsiveness, and vocal patterns that are not synchronized with the caregiver. In the second and third years, autistic children have less frequent and less diverse babbling, consonants, words, and word combinations; their gestures are less often integrated with words.

Brain cells

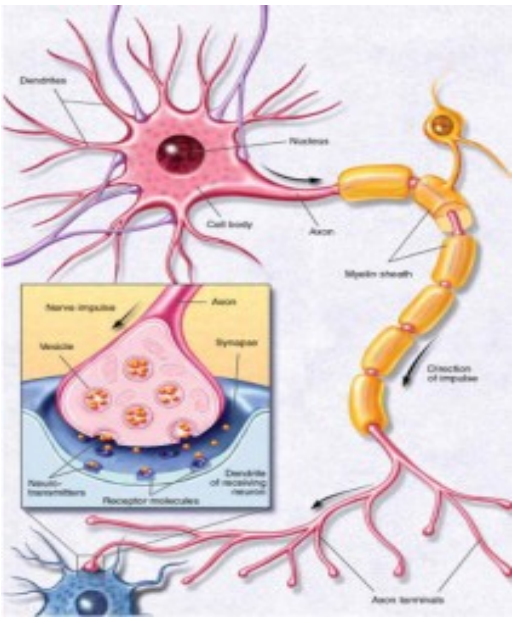
Brain cells are electrically excitable cells that process and transmit information by electrical and chemical signaling. Chemical signaling occurs via synapses, specialized connections with other cells. Neurons connect to each other to form networks. Neurons are the core components of the nervous system, which includes the brain, spinal cord, and peripheral ganglia. A number of specialized types of

neurons exist: sensory neurons respond to touch, sound, light and numerous other stimuli affecting cells of the sensory organs that then send signals to the spinal cord and brain.

There are about 100 billion neurons in the brain.There are many types of neurons, varying in size from 4 microns (.004 mm) to 100 microns (.1 mm) in diameter. Their length varies from a fraction of an inch to several feet. There are many more glial cells providing support functions for the neurons.

Autistic children have much more nerve cells than normal children

A new study has found that excess of brain cells exists in children with autism.



In the research reported in the *Journal of the American Medical Association* (JAMA), scientists at the University of California, San Diego, found that autistic children have about 67% more nerve cells in a part of the brain known as the prefrontal cortex than children without autism. The prefrontal cortex is involved in processing social skills, communication, cognitive functions and language — ***all areas in which autistic children often show abnormal development.***

They studied the brains of seven autistic boys between the ages of 2 and 16 after their death and compared his analysis to the brains of six unaffected boys who died at similar ages. ***The excess of neurons was found with a surprise since in most cases, deficits in social skills in autistic children typically are linked to less nerve tissue/cells.***

Equally significant is the fact that the excess of neurons in the prefrontal cortex are not formed after birth, but during early development in utero. That suggests that the changes responsible for autism are occurring much earlier than scientists had thought.

The lead researcher Courchesne concluded, “Knowing that we have a specific type of defect that occurs very early in development really helps us to focus and sharpen the next steps in research to determine what caused the excess and hopefully find new treatments that can help children and their families cope better with the symptoms of autism.”

Via

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