Researchers find further evidence of disturbed immune system in autism

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(Medical Xpress) -- A University of Kansas Medical Center study found significantly lower levels of several cytokines, the immune system's messengers and regulators, in the plasma of children with autism disorder (AD) compared to that of unrelated healthy siblings from other families who had members with autism spectrum disorders (ASD). The study was published in the April 2012 *International Journal of Developmental Neuroscience*.

In particular, of the 29 cytokine levels analyzed, the researchers found disturbed levels in five related to the T-helper cell immune system and three involved in hematopoiesis or the production of blood cells possibly affecting antibody production required for normal immune system activity.

The immune system and genetic factors have both been implicated in the biological basis for autism, said Merlin G. Butler, professor of psychiatry at the KU Medical Center. "Our study further supports a disturbed immune system in children with classic autism that may be related to genetic factors as cytokine proteins are coded by genes distributed among the human chromosomes."

Furthermore, studies in families with autism have shown the significant contribution of genetics, including deletions and duplications of chromosomes and mutations or variants found in specific genes involved with brain development and function, he said.

“The importance of identifying early immunological disturbances that may contribute to autism has implications for identifying risk factors, diagnosis and possibly intervention as cytokines may play a role in the function of the developing brain," he said.

The study was one of the largest of its type so far, analyzing the plasma of 99 children with AD between 5 and 10 years of age and that of 40 age- and gende- matched unrelated healthy siblings without AD under the same clinical assessments, specimen processing and laboratory conditions. The male-to-female ratio closely matches that seen in the ASD population, and there were gender-based differences found in five cytokines.

The study is one of only a few to use nanoparticle technology to examine cytokine patterns from peripheral blood in ASD children that requires very small quantities of plasma for analysis and utilizes standardized kits for cytokine assay.

This methodology should allow for other investigators to test the findings of disturbed cytokines in ASD, Butler pointed out.

Butler said that the direction of this research is toward linking the genes encoding immune-related proteins and cytokines to ASD along with identifying the sequence of the events during critical periods of brain and neurological development. This may possibly allow for early recognition, diagnosis and potential treatment.

Ann Manzardo, assistant professor of psychiatry, was the first author on the study.

Provided by University of Kansas