

Low levels of hormone linked to social deficit in autism, study finds

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A brain-chemistry deficit in children with autism may help to explain their social difficulties, according to new findings from the Stanford University School of Medicine.

The research team found a correlation between low levels of vasopressin, a hormone involved in social behavior, and the inability of [autistic children](#) to understand that other people's thoughts and motivations can differ from their own.

The research will be published July 22 in *PLOS ONE*.

"Autistic children who had the lowest vasopressin levels in their blood also had the greatest social impairment," said the study's senior author, Karen Parker, PhD, associate professor of psychiatry and behavioral sciences.

The findings raise the possibility that treatment with vasopressin might reduce social problems for autistic children who have low vasopressin levels, a hypothesis that Parker and her team are now testing in a clinical trial.

However, the new research also showed that children without autism can have low vasopressin levels without displaying social impairment, Parker noted; in other words, autism is not explained by a vasopressin deficit alone.

Investigating vasopressin

Autism is a developmental disorder that affects 1 out of every 68 children in the United States. It is characterized by social and communication deficits and repetitive behaviors. The new study examined a social trait that psychologists call "theory of mind": the ability to understand that others have different perspectives. Poor "theory of mind" makes it harder for people with autism to empathize and form relationships with others.

Vasopressin is a small-protein hormone that is structurally similar to oxytocin. Like oxytocin, it has roles in social behavior. Vasopressin also helps regulate blood pressure.

In the new study, the researchers first verified that vasopressin levels in the blood accurately reflected vasopressin levels in the brain by measuring the hormone's levels simultaneously in the blood and cerebrospinal fluid of 28 people who were having the fluid collected for medical reasons.

They then recruited 159 children ages 3-12 for behavioral testing. Of these children, 57 had autism, 47 did not have autism but had a sibling who did, and 55 were typically developing children with no autistic siblings. All of the children completed standard psychiatric assessments of their neurocognitive abilities, social responsiveness, theory of mind, and ability to recognize others' emotions, which is known as affect recognition. All children gave blood samples that were measured for vasopressin.

In all three groups, children had a wide range of vasopressin levels, with some children in each group having low, medium and high levels. Children without autism had similar scores on theory of mind tests regardless of their blood vasopressin level, but in children with autism, low [blood](#) vasopressin was a marker of low theory of mind ability.

Testing the hormone's effects

Parker and her collaborator, Antonio Hardan, MD, professor of psychiatry and behavioral sciences, are now investigating whether vasopressin treatment improves social ability in children with autism. They are interested in whether the hormone is beneficial only for autistic children who start with low vasopressin levels or whether it might benefit all children with [autism](#).

Provided by Stanford University Medical Center

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