



Bonding Hormone Improves Symptoms of Schizophrenia

The same hormone that helps mothers and babies bond may help ease the symptoms of schizophrenia. New research studying the effects of oxytocin suggests that the hormone may have a potential benefit in treating patients with schizophrenia.

Dr. David Feifel from the Department of Psychiatry at the University of California in San Diego, and his research team, found that a nasal spray of oxytocin administered to patients with schizophrenia resulted in a reduction of symptoms.

Oxytocin is a hormone that is important in promoting a close relationship. Levels of oxytocin increase during close physical contact, such as cuddling, or when a mother nurses a baby. Prior research has shown that oxytocin can decrease levels of fear, can improve emotional attachment in individuals with autism, and can increase levels of trust.

Feifel and his team studied 19 individuals with schizophrenia. Each patient received

either the oxytocin nasal spray or a placebo nasal spray for three weeks. After the three weeks, there was a one-week rest period, and then each participant crossed over and received the other treatment for the next three weeks. Each patient continued their regular psychiatric medication and therapy.

Symptoms of schizophrenia were assessed before and after each treatment by two different standard clinical assessments, the Positive and Negative Symptom Scale and the Clinical Global Impression-Improvement Scale.

Fifteen patients completed the study. At first, no change was seen in symptoms, but by the end of the third week on the oxytocin nasal spray, the patients had on average an eight percent reduction of symptoms, including a decrease in symptoms of psychosis.

There were no apparent side effects noted during the three-week trial by either patient report or laboratory testing. Previous studies have shown that mice that are unable to produce the hormone are more susceptible to amphetamine-induced psychosis. Although the exact mechanism by which oxytocin might work to decrease schizophrenic symptoms is unclear, there are several possibilities. Oxytocin may help lower the levels of dopamine which can lead to hallucinations if too high. Or, as oxytocin has been shown to increase levels of trust, it may work by decreasing symptoms of paranoia.

Ken Erickson MD, medical director at Northwest comments that, "While the study was small and short term, it is an important first step in finding a new possible avenue of treatment for schizophrenia and perhaps other psychiatric illnesses. Further research may determine if oxytocin is of real benefit in treating schizophrenia."

Dr. Feifel's results are published in the July 7 edition of the journal *Biological Psychiatry*.

Get Help

To find help for your teen, discuss your concerns with a school counselor or others such as a family doctor, psychiatrist, psychologist, social worker, religious counselor, or nurse. For additional information or confidential consultation without cost or obligation, contact Northwest Behavioral Healthcare Services. They have specialized staff expertise and a progressive program design that offer a considerable number of competitive advantages.

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focus

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A Medication for Autism?

Oxytocin, a hormone best known for activity during birth and lactation, is also a brain neurotransmitter involved in social recognition and bonding. According to first round research, this hormone may have significant positive effects on adult autism patients.

A new study, funded by the Seaver Foundation, examined the effects of oxytocin on repetitive behaviors and certain aspects of social cognition in adults with autism. The hormone was administered using intravenous fluid and nasal technology, thereby allowing more to enter the blood stream.

"When administered orally, oxytocin is metabolized and only a small amount reaches the brain. This is important because the behavioral effects of oxytocin are thought to result from its action on the brain", explained investigators Eric Hollander, MD and Jennifer Bartz, PhD.

"Studies with animals have found that oxytocin plays a role in a variety of behaviors, including parent-child and adult-to-adult pair bonding, social memory, social cognition, anxiety reduction, and repetitive behaviors," explained Dr. Bartz.

"However," adds Dr. Hollander, "we have only recently considered that administration of oxytocin can have behavioral effects. Autism is a particularly ripe neuropsychiatric disorder for studying this approach, because it presents with the types of symptoms that have been found to be associated with the oxytocin system." *(Continued on page 3)*

What Is Oxytocin?

Oxytocin is a hormone that also acts as a neurotransmitter in the brain. In humans, oxytocin is thought to be released during hugging, touching, and orgasm in both sexes. In the brain, oxytocin is involved in social recognition and bonding, and may be involved in generosity and the formation of trust between people.

In women, it is released in large amounts after distension of the cervix and vagina during labor, and after stimulation of the nipples, facilitating birth and breastfeeding, respectively.

Who Are We?

For many years, Northwest Behavioral Healthcare Services has been providing residential treatment in Oregon to troubled youth, ages 12 to 17. The staff of Northwest has shown itself to be successful with those more "difficult to treat" — especially those with a dual diagnosis who need a secure setting for their care.

Oxytocin Helps Socially Challenged

Does social awkwardness have a neurochemical basis? Does a lack of empathy reflect a lack of a hormone?

New research suggests oxytocin, a naturally occurring hormone, may improve social cognitive abilities in less socially proficient individuals.

However, researchers at Mount Sinai School of Medicine found the hormone has little effect on those who are more socially proficient. The study is published in the journal *Psychological Science*.

Researchers at the Seaver Autism Center for Research and Treatment at Mount Sinai School of Medicine and Columbia University wanted to determine if oxytocin, popularly dubbed the “hormone of love,” could have widespread benefit in making us more understanding of others.

They conducted a randomized, double-blind, placebo-controlled, cross-over study, giving 27 healthy adult men oxytocin or a placebo delivered nasally.

Participants then performed an empathic accuracy task in which they watched videos of people discussing emotional events from their life and rated how they thought the people in the videos were feeling.

Although all participants were healthy adults who did not have autism, the researchers looked at whether differences in social cognitive expertise affected their response to oxytocin.

Social competency was measured using the Autism Spectrum Quotient (ASQ), a common, self-report instrument that measures social cognitive performance. Results showed that oxytocin improved empathic accuracy, but only in those individuals who were less socially proficient to begin with.

“Oxytocin is widely believed to make all people more empathic and understanding of others,” said Jennifer Bartz, PhD, assistant professor of psychiatry at Mount Sinai School of Medicine, and lead author of the study.

“Our study contradicts that. Instead, oxytocin appears to be helpful only for those who are less socially proficient.” More socially proficient participants performed well on the empathic accuracy task regardless of whether they were on oxytocin or placebo.

By contrast, less socially proficient participants performed poorly on placebo but significantly better on oxytocin. In fact, on oxytocin, their empathic accuracy performance was identical to that of the socially proficient participants.

“Our data show that oxytocin selectively improves social cognition in people who are less socially proficient, but had little impact on more socially proficient individuals,” says Dr. Bartz.

Heather Jensen MA, a therapist specializing with adolescents at Northwest, adds her insights to these findings. “While these results are very preliminary, they’re exciting in the possibilities they might open to some day treating the painfully shy, the socially phobic or avoidant, or even the socially challenged adolescent hiding behind bullying behaviors.”



Hormones for Happy Memories and Bonding

A new study published in the August 1st issue of *Biological Psychiatry* now shows that one way oxytocin promotes social affiliation and bonding in humans is by enhancing the encoding of positive social memories.

Adam J. Guastella, Ph.D. and his colleagues sought to evaluate the effects of oxytocin on the encoding and recognition of faces in humans. They recruited healthy male volunteers and in a double-blind, randomized design, administered either oxytocin or a placebo. They then presented a series of happy, angry, and neutral human faces to the volunteers on a computer screen.

Participants returned the following day where they were presented with a collection of faces and asked to distinguish the new faces from ones that they saw on the prior day. The results revealed that those who received oxytocin were more likely to remember the happy faces they had seen previously, more so than the angry and neutral faces.

Dr. Guastella notes that the “findings are exciting because they show for the first time that oxytocin facilitates the encoding of positive social information over social information that is either neutral or negative.”

“When I think about a young mother with a newborn, this research makes perfect sense,” says Diana Kerr MSW, CADC-I, a family therapist at Northwest. “Often a challenging time, oxytocin must help mothers to remember the positive moments more than the negative, and this facilitates bonding.”

Social isolation can be a feature of several psychiatric disorders. The success of oxytocin in enhancing positive social memories raises the possibility that oxytocin, or drugs that might act like oxytocin in the brain, could be used to help people who are socially isolated and have difficulty making social connections.



A Medication for Autism?

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High-functioning adults with autism or Asperger’s disorder received an intravenous infusion of Pitocin (synthetic oxytocin) or placebo (saline solution) over a four-hour period. During that time, participants were monitored for repetitive behaviors that are hallmarks of autism spectrum disorders including need to tell/ask, touching, and repeating. These behaviors were assessed at a baseline and throughout the course of the infusion.

“Repetitive behaviors are often overlooked as symptoms of autism in favor of more dramatic symptoms like disrupted social functioning,” noted Hollander. “However, early repetitive behavior is often the best predictor of a later autism diagnosis.”

The infusion produced results that were both clinically and statistically significant. Hollander noted a rapid reduction of repetitive behaviors over the course of the oxytocin infusion, whereas no such reduction occurred following the placebo infusion, suggesting that oxytocin does indeed address these symptoms.

Researchers also looked at the effects of oxytocin on social cognition. Autism patients are often unable to detect or read emotion in others through facial and voice cues, resulting in the decreased ability to have meaningful interactions with others that characterizes individuals with this disease.

To test participants’ ability to assign affective significance to speech, participants listened to pre-recorded sentences with neutral semantic

content that were presented with different intonations such as anger, sadness, or happiness. Participants were asked to identify the emotion. Participants received intravenous infusions of Pitocin or placebo (saline solution) over a four-hour period; participants then returned approximately two weeks later, receiving the alternate compound. Comprehension of affective speech was assessed throughout the four-hour infusion on both occasions, that is, once with the intravenous infusion of oxytocin and once without.

Most interestingly, participants who received oxytocin on the first testing day retained the ability to assign affective significance to speech, performing above expectations when they returned approximately two weeks later. This effect was not found among participants who received the placebo on the first testing day.

Hollander and his colleagues are among the first group to have used intravenous fluid technology and nasal technology to study the behavioral effects of oxytocin in autism spectrum disorders. Though the findings are promising, Hollander cautions that this research is still very preliminary.

“Our findings will need to be replicated in large scale, placebo controlled trials to fully explore treatment potential,” said Hollander. “And, though both intravenous and intranasal approaches have been well tolerated, we need to understand more about the safety of these potential treatments, particularly before these effects are explored in autistic children.”

Drugs for Empathy

Recent studies conducted by Dr. René Hurlmann of Bonn University’s Clinic for Psychiatry, along with other scientists and researchers, suggest oxytocin can increase a person’s ability to empathize, socialize, and possibly lead the way to medicate social anxiety disorders.

Scientists sought to test what effects elevating this hormone would have in men. Scientists studied a group of 48 healthy males. The hormone was administered to 24 males with a nose spray. The other half received a placebo.

Researchers then showed the men photos of emotionally-charged subjects. One photo was of a girl hugging her cat, another a grieving man. The men were then asked for emotional reactions. “Significantly higher emotional empathy levels were recorded for the oxytocin group than for the placebo group,” said Hurlmann. The study discovered that oxytocin plays a role in regulating emotional empathy. The research sites that the group with the oxytocin expressed levels of emotion in men that would normally be expected of a woman. It is unclear as to how long the spray lasts.

Dr. Hurlmann suggests the social benefits of this hormone might be useful for helping people who cope with schizophrenia and possibly even autism, which are frequently associated with reduced social approachability and social withdrawal.

Mammal Studies

- Oxytocin injected into the cerebrospinal fluid causes spontaneous erections in rats, reflecting actions in the hypothalamus and spinal cord.
- Plasma concentrations of oxytocin have been reported to be higher amongst people who claim to be falling in love.
- Sheep and rat females given oxytocin antagonists after giving birth do not exhibit typical maternal behavior. By contrast, virgin female sheep, given a cerebrospinal fluid infusion of oxytocin, show maternal behavior towards foreign lambs, which they would not do otherwise.