Oxytocin Nasal Spray and Autism Spectrum Disorder (ASD)

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Autism spectrum disorder (ASD) is a neurological and developmental disorder that can have a significant impact on sensory processing. Those with ASD commonly have increased sensitivities to different food textures or flavors,[1] and these sensitivities may manifest in difficulty administering pills or even oral liquids, especially to pediatric patients.[2] Alternative dosage forms and compounding can help increase acceptance of medications for patients with ASD, including (but not limited to):

- Compounding solid oral dosage forms into oral liquids with the addition of patient specific flavoring options
- Chewable options
- Rapid dissolve tablets
- Sprinkle capsules or powder packets
- Nasal sprays
- Transdermal options

Oxytocin is known to play a role in social development, leading researchers to hypothesize that it may be useful in pediatric patients with ASD. However, clinical trials are mixed regarding the efficacy of oxytocin for ASD.

Oxytocin Trials for Patients with ASD

One double-blind, randomized, placebo-controlled trial evaluated patients with ASD between 3 and 12 years of age. Patients were given 16IU oxytocin via nasal spray twice daily in the morning and at night for 12 weeks. Though there was no statistically significant difference in caregiver-rated Social Responsiveness Scale (SRS) in the group as a whole, there was statistically significant benefit in a subgroup of patients between ages 3-5.[3]

Another randomized clinical crossover trial evaluated the impact of 12IU oxytocin in patients between 3 and 8 years of age. The group was given a dose of 12IU oxytocin twice daily in the morning and at night, as compared to placebo over a 5-week period for each group. This study found statistically significant improvement in caregiver-rated SRS and improved experimenter-rated impressions of clinical global improvement in the oxytocin group as compared to placebo.[4]

However, another trial that looked at older patients between 12 and 18 years of age given 18 or 24IU of oxytocin twice daily for 8 weeks did not note improvement on caregiver rated SRS.[5] A similar trial that also included slightly older patients (age range 7-16 years) with ASD found that 24 or 12 IU oxytocin given once daily over four days did not significantly improve primary outcomes such as emotion recognition or social interaction skills in their study.[6]

Evidence on oxytocin nasal spray for ASD is mixed. Trials that have noted benefits tend to evaluate younger patients, whereas some of those including older patients and teenagers failed to note statistical significance. Further studies stratifying patients by age may offer insight into the age group (if any) that benefits most from intranasal oxytocin.

Additionally, doses evaluated varied in these studies from 12IU once daily up to 24IU twice daily. Standardization of dose or potentially differing doses in older vs younger patients may also yield different results.

Another factor to consider is the frequency of application and the setting of the application. Most studies evaluated twice daily dosing. However, both frequency of administration and the timing of administration in relation to other treatments such as social cognition training may be important for efficacy.[9]

The Placebo Effect

Due to the subjective nature of many measurements for improvement of ASD, the placebo effect can be quite large. Some studies of oxytocin vs placebo noted significant improvement in both groups, but failed to note statistical significance between placebo and oxytocin, complicating the picture of oxytocin's efficacy.[3,8]

One study tackled this issue by developing a two-part protocol. First, patients 8-12 years of age were randomized into treatment or placebo groups for a 4-week double-blind phase. After this initial phase, patients were then all given the treatment (oxytocin 12IU twice daily) for four weeks. The study found improvement of SRS in both placebo and oxytocin groups during the double-blind phase, but the difference between the two groups didn't reach statistical significance.

In a follow-up single-blind trial, patients who were on placebo were changed to intranasal oxytocin. The trial showed that patients did receive higher SRS scores above what they had achieved on placebo after switching to oxytocin treatment. Patients who received oxytocin in the first phase also showed further improvement after an additional 4 weeks of oxytocin nasal spray.[9] The improvement noted over time in this study suggests that duration of treatment may also impact efficacy of oxytocin.

While further data is needed to identify dose, frequency, and appropriate age group, intranasal oxytocin may offer some benefit to patients with ASD. Oxytocin represents a therapeutic option that does not require oral

administration and has generally been noted to be well tolerated and potentially efficacious in several placebo-controlled trials.

For further information or questions, please feel free to reach out to us by heading to www.fagronacademy.us!

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