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Intranasal Oxytocin in Autism Spectrum Disorder Children and Adolescents

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INTRODUCTION

Few treatments are available for core symptom domains in autism spectrum disorder. Several animal models and studies in typically developing volunteers suggest that manipulation of the oxytocin system may have therapeutic potential for the treatment of social deficits. We review the literature on oxytocin and ASD and present data on the early dosing, safety, and efficacy of multidose oxytocin on aspects of social cognition, repetitive behavior, and co-occurring anxiety in ASD. The ADOS and ADI-R were used to diagnose ASD in 15 verbal children and adolescents. They participated in an oxytocin-modified maximum tolerated dose intranasal study. Data were modeled using repeated-measures regression analysis, all controlling for week, dose, age, and sex. The highest dose of the four tested was found to be well tolerated. No serious or serious adverse events were reported, and reported adverse events were mild to moderate in severity. Several measures of social cognition, repetitive behavior, and anxiety showed sensitivity to change over 12 weeks of treatment, with some suggesting that the effect persisted 3 months after cessation of intranasal oxytocin. This pilot study suggests that intranasal oxytocin at 0.4 IU/kg/dose is safe and has therapeutic potential in children and adolescents with ASD. Larger studies are needed.

DESCRIPTION

This article is part of a special issue on oxytocin and social behavior. According to experimental studies and small clinical trials, treatment with intranasal oxytocin can reduce social impairment in people with autism spectrum disorder. Many children with autism spectrum disorder have received oxytocin in clinical settings. We conducted a 24-week placebo-controlled phase 2 study of intranasal oxytocin therapy in children and adolescents with autism spectrum disorder aged 3 to 17 years. Participants were randomized to receive oxytocin or placebo intranasally in a 1:1 ratio, with stratification based on age and verbal fluency, with a total target dose of 48 international units per day. The primary outcome was the least-squares mean change from baseline on the modified 13 item Social Withdrawal Checklist subscale for aberrant behavior, with higher scores indicating more severe withdrawal. Two additional measures of social functioning and an abbreviated measure of IQ were used. 290 of the 355 children and adolescents who were examined were enrolled. The oxytocin group had 146 participants and the placebo group had 144; 139 and 138 participants completed both baseline and at least one post-baseline ABC-mSW assessment and were included in modified intention to treat analyses. The mean change in ABC-mSW score from baseline in the oxytocin group was -3.7, while it was -3.5 in the placebo group. Secondary outcomes were not significantly different between trial groups. The frequency and severity of adverse events were comparable between the two groups. Over the 24-week period, there were no significant differences between groups in the least squares mean change from baseline on measures of social or cognitive function. study of intranasal oxytocin therapy in children and adolescents with autism spectrum disorder. Taking existing research findings from the behavioral and neural effects of oxytocin administration, as well as those on brain activity in response to behavioral interventions in children with ASD, both oxytocin and behavioral interventions appear to produce measurable changes in areas of the “social brain” and reward network.

CONCLUSION

These findings, along with those suggesting that oxytocin administration can improve social communication in children with ASD; provide an empirical basis for our hypothesis that combining oxytocin administration with behavioral interventions

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can improve social communication outcomes. Prime the neural reward system to be more responsive to the behavioral skills taught during the intervention session. Because the reward system plays such an important role in our theoretical model, we hypothesize that this combined approach will be most effective for social-communicative skills that require social motivation, and will best for small children.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.