Oxytocin May Help Frontotemporal Dementia

Sue Hughes | January 20, 2015

Intranasal administration of oxytocin twice daily for 1 week was safe and well tolerated and showed preliminary signs of improvement in symptoms of apathy and loss of empathy in patients with frontotemporal dementia, according to a new study.

The study, published in the January 13 issue of *Neurology*, was led by Elizabeth C. Finger, MD, Western University, London, Ontario, Canada.

Dr Finger explained to *Medscape Medical News* that frontotemporal dementia is the second most common cause of presenile dementia. "It typically starts in the 50s or 60s and appears to have a different pathology to Alzheimer's, with loss of empathy being the hallmark symptom in the most common subtype — known as behavioral variant."

"This emotional blunting and social behavioral decline is distressing and challenging to caregivers," she noted. "The patient usually has a striking lack of insight into their condition. They tend to become very self-centered and unappreciative of other family members.

"Based on our preliminary data there is potential for oxytocin to have a meaningful effect to increase the quality of interaction between patients and their families. This could give families more time to have an emotional connection with a loved one," she said.

Emotional Blunting

Oxytocin is believed to be an important mediator of social behavior, potentially enhancing empathy. When given to healthy adults or patients with autism, oxytocin has improved emotional expression, empathy, and cooperative behavior. In addition, a single intranasal dose was associated with a transient improvement in social and neuropsychiatric behaviors vs placebo in patients with frontotemporal dementia, the researchers note.

This study was therefore conducted to look at repeated dosing and identify an optimal dose.

For the randomized, double-blind study, 23 patients with behavioral variant frontotemporal dementia or semantic dementia were randomly assigned to placebo or one of three doses of intranasal oxytocin (24, 48, or 72 IU) administered twice daily for 1 week.

Results showed that all three doses of intranasal oxytocin were safe and well tolerated.

For efficacy, oxytocin produced changes in subscales of the Neuropsychiatric Inventory, the Interpersonal Reactivity Index, and the Frontotemporal Lobar Degeneration–modified Clinical Dementia Rating (FBI) scale, consistent with improvements in levels of apathy and expressions of empathy. These changes were related to improved patient –caregiver interactions (based on caregiver interviews).

Hypersexuality a Side Effect?

Because oxytocin has been associated with forms of aggression in animal studies, this was a focus of interest in the current study, but no instances of increased aggression were seen. However, one third of patients receiving oxytocin had reported increases in hypersexual behaviors (vs 14% in the placebo group), which the researchers say were mild. Nonetheless, these increases raise concerns that they could become a limiting side effect for some patients.

"As some patients with frontotemporal dementia can already have hypersexuality, this may be a problematic side effect for some individuals, and we will be watching carefully for this in future studies," Dr Finger told *Medscape Medical News*.

No trends of effects of intranasal oxytocin were observed on nonsocial aspects of cognition.

The authors conclude: "Taken together, these results suggest a favorable benefit/risk ratio for chronic oxytocin treatment over 1 week in [frontotemporal dementia]." These findings "strongly suggest" that longer-term efficacy studies of intranasal oxytocin for treating social and behavioral deficits in frontotemporal dementia should be pursued, they add.

In terms of dose, there appeared to be a significant, dose-related improvement on the FBI apathy subscale, suggesting that the maximum dose used (72 IU) may be most promising.

Dr Finger added that habituation has been seen with long-term use in animal studies, "so we will look carefully at that in future studies and also consider intermittent dosing regimens to deal with it if it does occur."

The researchers are now planning a multicenter study.

This study was funded by a grant from the Canadian Consortium of Cognitive Clinical Research and by the Hazel Soper Foundation. The intranasal oxytocin was manufactured by Novartis Switzerland (Syntocinon) and purchased from International Apotheke (Bern, Switzerland), but the companies had no role in the funding, study design, data collection, analysis, interpretation, or manuscript preparation.

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