Biomedical Update:

Botox for tooth-grinding?

In severe cases, tooth-grinding (bruxism), a fairly common behavior in autism, can cause extensive tooth damage and temporomandibular joint pain. The standard treatment for bruxism is an oral device that prevents tooth-grinding, but few autistic patients are willing to wear the device and can wear it safely without risk of aspiration. For the remainder, Michigan dentists Phillip Monroy and Marcio da Fonseca suggest an alternative: injections of botulinum toxin.

The doctors used bilateral injections of botulinum toxin type-A (Botox) to treat the severe bruxism of an 11-year-old male with autism and a genetic disorder called Bannayan-Zonana syndrome. The doctors report that treatment reduced both the frequency and the severity of tooth-grinding, with benefits lasting for 60 days. In addition, they say, the boy's parents "noticed his improved ability to focus on tasks, a longer attention span and a general improvement in his demeanor." Side effects included temporary drooling and soreness at the injection site.

Drawbacks of the procedure, Monroy and da Fonseca note, include the short duration of benefits (several months) and the high cost, as well as the need for conscious sedation or general anesthesia for patients who are unable to cooperate.

Editor's note: Parents considering this treatment for their children should be aware that continued use of botulinum injections can cause an immune system response, and that chronic high-dose administration can cause muscle weakness and facial pain.

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"The use of botulinum toxin-a in the treatment of severe bruxism in a patient with autism: a case report," P. G. Monroy and M. A. da Fonseca, *Special Care in Dentistry*, Vol. 26, No. 1, January/February 2006, 37-9. Address: P. G. Monroy, pmonroy@smilemichigan.com.

Naltrexone's effects on Crohn's hint at reason for benefits in autism

Jaquelyn McCandless and other DAN! doctors are reporting that many autistic children exhibit improved mood, communication, cognition, and social skills when they receive small transdermal doses of the opiate-blocking drug naltrexone. McCandless theorizes that naltrexone's benefits stem from its ability to restore the body's normal production of endorphins, which are naturally-produced chemicals that affect emotions.

A new study, this one of patients with Crohn's disease, hints that low-dose naltrexone may also benefit autistic children by easing the gastrointestinal distress that is common in autism. While the study did not address autism specifically, Crohn's and autism share a number of similarities: both involve gastrointestinal inflammation, both are linked to immune dysfunction, and measles vaccine is suspected as a culprit in both diseases.

In this preliminary, non-blinded trial, Jill Smith and colleagues treated 17 patients with Crohn's with low-dose naltrexone for 12 weeks. Fifteen of the patients (89%) experienced significant improvement, and 11 went into remission. Other than minor sleep disturbances, no side effects occurred. One patient underwent endoscopy following therapy, and the results showed healing of the intestinal mucosa. Two others had open fistulas (ulcers that can invade organs surrounding the intestine) at the beginning of therapy, and these closed during treatment.

Smith and colleagues note that opioid antagonists such as naltrexone "have been shown to play a role in healing and tissue repair."

(See related articles on pages 1 and 6.)

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"Low-dose naltrexone as a treatment for active Crohn's disease," J. P. Smith, H. E. Stock, S. I. Bingaman, D. T. Mauger, and I. S. Zagon, presentation to the Digestive Disease Week Conference, Los Angeles, CA, May 2006.

Autism/cholesterol link?

Children with Smith-Lemli-Opitz syndrome (SLOS), a genetic disorder that causes a impairment of cholesterol synthesis, have unusual facial features and and other malformations, and exhibit either mental retardation or milder learning and behavioral disabilities. Darryn Sikora and colleagues recently evaluated 14 children with SLOS, to determine how many of them qualified for a diagnosis of autism spectrum disorder. The researchers report, "Approximately three-fourths of the children with SLOS... had an autism spectrum disorder, about 50% diagnosed with autistic disorder and the rest with PDD-NOS."

Noting that SLOS "appears to have the most consistent relationship with autism of any single gene disorder," the researchers suggest that there may be a link between impaired cholesterol metabolism and autism.

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"The near universal presence of autism spectrum disorders in children with Smith-Lemli-Opitz syndrome," D. M. Sikora, K. Pettit-Kekel, J. Penfield, L. S. Merkens, and R. D. Steiner, *American Journal of Medical Genetics*, June 7, 2006 (epub ahead of print publication). Address: Darryn M. Sikora, Child Development and Rehabilitation Center, Oregon Health and Science University, Portland, OR.

More clues implicate "extreme male brain" as factor in autism

Studies of autistic individuals and their relatives suggest that autism is associated with "extreme male brain" (see ARRI 20/1), possibly caused by excess exposure to male hormones during early development. Additional evidence supporting this theory comes from a study of individuals with a different disorder—congenital adrenal hyperplasia (CAH). People with CAH, an inherited disorder, over-produce androgens ("male" hormones, also present in lesser amounts in females).

Rebecca Knickmeyer, Simon Baron-Cohen and colleagues asked 34 females and 26 males with CAH to complete the Autism Spectrum Quotient, a test measuring autistic symptoms, and compared their results to those of relatives not affected by CAH. The researchers report that females with CAH had higher scores than control females (indicating worse symptoms) on subtests measuring social skills and imagination.

The researchers say, "These results suggest that prenatal exposure to high levels of testosterone influences some autistic traits and that hormonal factors may be involved in vulnerability to autism." They note, however, that none of the females with CAH had test scores in the autistic range, which "suggests that high levels of androgen may contribute to autism related traits, but that other factors are more important for the development of a diagnosable condition on the autistic spectrum."

Knickmeyer et al. note that males with CAH did not differ from controls, which they say is expected, "given that males with CAH typically do not show alterations in sexually differentated behaviors, perhaps because their testosterone levels are within the normal range prenatally."

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"Androgens and autistic traits: A study of individuals with congenital adrenal hyperplasia," R. Knichmeyer, S. Baron-Cohen, B. A. Fane, S. Wheelwright, G. A. Mathews, G. S. Conway, C. G. Brook, and M. Hines, *Hormones and Behavior*, April 17, 2006 (epub ahead of print publication). Address Rebecca Knickmeyer, Department of Psychology, City University, Northampton Square, London EC1V 0HB, UK.

—SCHOOLS AND SERVICES—

The Autism Research Institute maintains a list of schools and services for autistic individuals. If your facility should be included on our list, and you believe it may not be, please send a self-addressed, stamped envelope to receive our referral list questionnaire.