# Ear infections: researchers study chewing gum as "preventive medicine," allergies as cause

Autistic children appear to be even more prone to frequent ear infections than other children, and there is evidence that repeated use of antibiotics to treat otitis media (middle ear infection) may aggravate or, in some cases, even cause symptoms of autism by leading to infestation by Candida albicans. There is evidence as well that antibiotic treatment of otitis media is often ineffective (see ARRI 8/4) and, in the long run, contributes to the evolution of resistant "super bacteria."

For all of these reasons, a recent Finnish study is good news for parents of autistic children: its findings suggest that simply allowing children to chew gum sweetened with xylitol may reduce the incidence of ear infections, and thus the use of antibiotic therapy for otitis media, by almost half.

In a two-month experiment, M. Uhari et al. randomly assigned 157 preschool children to chew gum sweetened with xylitol, and 149 to chew gum sweetened with sucrose. Uhari and colleagues were interested in the effects of xylitol because previous research showed that the substance—a form of sugar found in plums, strawberries, and raspberries—can inhibit the growth of Streptococcus pneumoniae, which causes about 30% of acute otitis media attacks.

Uhari and colleagues report that "the use of xylitol gum reduced the incidence of otitis media by 40%," with only 12% of the xylitol-gum group developing otitis media compared to 21% of those chewing regular gum. In addition, they note, children who remembered to chew the xylitol gum every day were less likely to develop otitis media than xylitol-gum chewers who forgot frequently, while no similar difference was seen in the sucrose-gum group.

Uhari et al. note that "the total number of antimicrobial drugs prescribed in the sucrose group was 60, compared with 34 in the xylitol group. At least one episode on antimicrobial drugs was experienced by... 28.9% of children in the sucrose group and... 18.5% of children in the xylitol group."

***Simply allowing children to chew gum sweetened with xylitol may reduce the incidence of ear infections by almost half.***

The dose of xylitol received by each child was approximately 8.4 grams a day. The researchers note that doses of up to 45 grams of xylitol per day can be tolerated by children, although diarrhea is a possible side effect of ingesting large amounts of the sweetener.

**Allergies, ear infections: strong link seen**

In an earlier study of the causes and prevention of chronic ear infections, T. M. Nsouli and colleagues examined the relationship between serous otitis media and food allergy.

Nsouli et al. evaluated 104 children with recurrent serous otitis media, using skin prick testing, IgE tests, and food challenges to identify children with allergies. Eighty-one children were found to have allergies to foods, most commonly milk, wheat, eggs, peanuts, soy, and corn. Most of the children were allergic to two to four foods.

The researchers placed the 81 children with allergies on a 16-week diet that excluded the foods to which they were allergic. The diet, the researchers report, "led to a significant amelioration of their middle ear disease (effusion) in 70 of the 81 patients."

The researchers then conducted a challenge, reinstating the allergy-causing foods in the diets of the 70 children whose ear infections had decreased during the allergen-free diet. "A recurrence of serous otitis media was seen in 66 of 70 (94%) over a 16-week period," they report. (Two of the children who did not experience ear infections had discontinued the challenge diet.)

Nsouli et al. conclude that "the possibility of a food allergy should be considered in all patients with recurrent serous otitis media and a diligent search for the putative food allergen made for proper diagnostic and therapeutic management."

**Editor's note: Researcher Erdem Cantekin, a leading critic of antibiotic treatment for acute otitis media (see ARRI 6/4), suggests the European approach if your child develops an ear infection: "Buy an eardrop solution at the drug store which is 20% benzocaine (a local anesthetic), and give the child NyQuil, which contains acetaminophen and a decongstant, to alleviate pain and congestion."**

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"Xylitol chewing gum in prevention of acute otitis media: double blind randomised trial," M. Uhari, T. Kontiokari, M. Koskela, and Marjo Niemela; *British Medical Journal*, Vol. 313, No. 7066, November 9, 1996, pp. 1180-184. Address: M. Uhari, Department of Paediatrics, University Hospital of Oulu, 90220 Oulu, Finland.

—and—

"Role of food allergy in serous otitis media," T. M. Nsouli, S. M. Nsouli, R. E. Linde, F. O'Mara, R. T. Scanlon, and J. A. Bellanti; *Annals of Allergy*, Vol. 73, Sept. 1994. Address: Talal M. Nsouli, International Center for Interdisciplinary Studies of Immunology, Georgetown Univ. Medical Center, 3800 Reservoir Rd., NW, Washington, DC 20007.

# *Is "social intelligence" impaired in autism?*

Are there different, and independent, forms of intelligence? A new study by Fiona Scott and Simon Baron-Cohen suggests that social and nonsocial intelligence are separate, and that autistic children are impaired in the former but not the latter.

Scott and Baron-Cohen studied three groups of children: autistic children, children with moderate mental handicaps (matched for verbal mental age and chronological age with the autistic children), and non-disabled children. Each child took three types of tests:

—a test of logical reasoning, in which participants were required to reason logically about relations between items (an example: A>B, B>C, C>D, D>E, therefore B>D).

—tests of analogical reasoning, in which participants were required to reason about higher order relations between items (an example: A is to B as C is to D).

—A "theory of mind" test. Numerous studies by Baron-Cohen et al. suggest that autistic children are impaired in theory of mind—that is, in understanding that other people have beliefs, intentions, desires, etc., and that their actions can be explained by these inner states. In this study, Scott and Baron-Cohen used a classic theory of mind test to evaluate children's social intelligence. In this test, the child watches the researcher portray a story using two dolls, Sally and Anne. Sally hides her marble in a red box and then leaves. Anne then moves the marble to a blue box. Sally returns, and the child taking the test is asked, "Where does Sally think the marble is?"

The researchers report that autistic children did not show any deficits in logical reasoning, and performed well above chance on the analogical reasoning tests. On the test of social intelligence, however, autistic children were severely impaired. "Only four out of the 17 children with autism passed the theory of mind test," the researchers say, "compared to 12 out of 15 children with mental handicap and 14 out of 17 normal children."

Scott and Baron-Cohen conclude that autistic children "may show us the limitations of a cognitive system capable of non-social logical reasoning, but severely impaired in social-psychological reasoning." They note that children with Williams syndrome—known as "cocktail party syndrome," because children with the disorder are highly sociable in spite of their cognitive deficits—may, conversely, suffer from deficits in nonsocial intelligence while having normal social intelligence.

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"Logical, analogical, and psychological reasoning in autism: a test of the Cosmides theory," Fiona J. Scott and Simon Baron-Cohen; *Development and Psychopathology*, 8, 1996, pp. 235-245. Address: Fiona J. Scott, Department of Psychology, University of Greenwich, Southwood Site, Avery Hill Road, Eltham, London SE9 2HB.