Biomedical Update:

Magnesium reduces hyperactivity

For several decades, researchers have been reporting that magnesium supplementation, generally in conjunction with vitamin B6, can reduce the behavior problems of autistic children. A new study indicates that magnesium can also reduce hyperactivity in children with attention deficit hyperactivity disorder (ADHD).

Polish researchers Barbara Starobrat-Hermelin and Tadeusz Kozielec recently discovered that hyperactive children were more likely to suffer from magnesium deficiency than other children. This led the researchers to investigate the effects of magnesium supplementation on hyperactivity in children with ADHD and recognized magnesium deficiency.

The researchers studied 75 magnesium-deficient hyperactive children between the ages of 7 and 12. Fifty of the patients received magnesium supplements (3 mg/lb./day) for six months, while a control group of 25 children did not receive the supplements. (A number of children in both groups were also taking neuroleptic medications.)

The researchers report, "In all scales assessing hyperactivity after magnesium treatment, those examined obtained statistically better results in comparison with [their] state before therapy." In contrast, they note, the control subjects' behaviors worsened over the six-month study period. "The results of our work," Starobrat-Hermelin and Kozielec say, "indicate a need for magnesium supplementation in children with ADHD."

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"The effects of magnesium physiological supplementation on hyperactivity in children with attention deficit hyperactivity disorder (ADHD). Positive response to magnesium oral loading test," Barbara Starobrat-Hermelin and Tadeusz Kozielec; *Magnesium Research*, Vol. 10, No. 2, 1997, pp. 149-156. Address: Barbara Starobrat-Hermelin, Department of Family Medicine, Pomeranian Medical Academy, ul. Podgórna 22/23, 70-205 Szczecin, Poland.

—and—

"Assessment of magnesium levels in children with attention deficit hyperactivity disorder (ADHD)," Tadeusz Kozielec and Barbara Starobrat-Hermelin; *Magnesium Research*, Vol. 10, No. 2, 1997, pp. 143-148. See address above.

Risperidone: a positive report

A new study adds to evidence that the drug risperidone can ameliorate some symptoms of autism or pervasive developmental disorder (PDD).

Rob Nicolson and colleagues administered risperidone (Risperdal) to ten autistic boys ranging in age from 4 to 10. All subjects were started on a dose of 0.5 mg per day, and the dosage was increased as needed.

Behavioral tests administered before and after the 12-week drug trial indicated that 8 of the 10 children responded positively to the drug. (The average effective dose for subjects was 1.3 mg per day, with a range of 1 to 2.5 mg per day.) Decreases were seen in aggression, overactivity, and other autistic symptoms. The only side effects reported were temporary sedation and weight gain.

The researchers conclude, "These results suggest that risperidone may be safe and leads to improvements in several behavioral symptoms in young children with autism."

Nicolson et al. are the latest of several research groups to report that risperidone can have positive effects on autistic behavior. Joseph Horrigan and L. Jarret Barnhill reported last year that the drug caused "substantial clinical improvement" in autistic subjects who had not responded to other drug treatments, and R. L. Findling and colleagues reported significant improvements in autistic children taking risperidone (see ARRI 11/1, 11/2, 11/3).

Risperidone, a fairly new drug, appears to be significantly safer than traditional neuroleptics such as haloperidol (Haldol). However, side effects associated with risperidone use include liver abnormalities, neuroleptic malignant syndrome, and cardiac abnormalities (including one reported case of cardiac arrest).

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"An open trial of risperidone in young autistic children," R. Nicolson, G. Awad, and L. Sloman; *Journal of the American Academy of Child and Adolescent Psychiatry*, Vol. 37, No. 4, April 1998, pp. 372-376. Address: Rob Nicolson, Child Psychiatry Branch, NIMH, Building 10, Room 3N202, 10 Center Drive MSC 1600, Bethesda, MD 20892-1600.

Sertraline: benefits, few side effects seen

Christopher McDougle and colleagues, testing the drug sertraline (Zoloft) on autistic and autistic-like adults, report encouraging results and relatively few side effects.

McDougle et al. administered sertraline to 42 adults with autism, Asperger's syndrome, or pervasive developmental disorder. Before, during, and after the 12-week drug trial, the researchers measured participants' repetitive behaviors, aggression, and social relatedness.

The researchers report that 37 of the subjects completed the trial. Of the five subjects who did not finish the trial, three dropped out because of increased anxiety and agitation, one because of a fainting spell, and one because of noncompliance.

Twenty-four of the remaining subjects, the researchers say, "showed significant improvement, primarily in repetitive and aggressive symptoms." However, changes in social relatedness were not significant. Autistic and PDD subjects responded better to the drug than subjects with Asperger's syndrome—possibly because the subjects with Asperger's syndrome were less impaired to begin with.

The researchers say that sertraline was well tolerated by study subjects, and that "no adverse cardiovascular effects, extrapyramidal symptoms, or seizures were identified." Side effects, in addition to those seen in the study drop-outs, included anorexia, headache, ear-ringing, hair loss, weight gain, and sedation. *(Editor's note: Side effects reported by other researchers include dizziness, drowsiness, diarrhea, constipation, gas, loss of appetite, nausea, fatigue, headache, dry mouth, sweating, tremors, weight loss, twitching, tingling of the hands or feet, thirst, trouble urinating, mental confusion, and seizures. Mixed with MAO inhibitors, sertraline can cause severe and potentially fatal side effects including neuroleptic malignant syndrome.)*

McDougle et al. caution that their results cannot be generalized to include children and adolescents, and note that their study results need to be confirmed by placebo-controlled studies.

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"Sertraline in adults with pervasive developmental disorders: a prospective open-label investigation," Christopher J. McDougle, Edward S. Brodkin, Susan T. Naylor, Derek C. Carlson, Donald J. Cohen, and Lawrence H. Price; *Journal of Clinical Psychopharmacology*, Vol. 18, No. 1, 1998, pp. 62-66. Address: Christopher J. McDougle, James Whitcomb Riley Hospital for Children, Section of Child and Adolescent Psychiatry, 702 Barnhill Drive, Room 3701, Indianapolis, IN 46202.