

Biomedical Update:

Are autism and Tourette's syndrome seizure disorders?

Many autistic children have seizures — but could seizures actually *cause* autistic symptoms? Canadian researcher A. Gedye speculates that “many of the symptoms characteristic of autism fit the clinical picture of frontal lobe seizures,” and that the symptoms of Tourette syndrome also might be caused by such seizures.

In *Medical Hypotheses*, Gedye notes that movements such as head turning, echolalia, tooth grinding, grimacing, hand flapping, staring, twirling, laughing or screaming, toe walking, and noisy breathing are common in both autism and frontal lobe seizures. Frontal lobe seizures also appear to provoke self-injury and aggression in some cases.

Gedye also notes that frontal lobe disorders (with or without seizures) can cause other autistic-like symptoms such as attention deficit, hyperactivity, obsessive preference for sameness, and abnormalities in speech pitch and intonation.

Because the frontal lobes have connections to many brain areas, Gedye says, frontal lobe seizures could have a secondary effect on the brainstem, basal ganglia and other regions.

Frontal lobe seizures often occur without loss of consciousness, and in some cases can be nearly continuous, making them difficult to distinguish from autistic behavior. Gedye notes that frontal lobe seizures can occur with the same frequency, and for the same duration, as autistic behaviors.

Many researchers have speculated that autism is linked to defects of the frontal and temporal lobes—areas affected by frontal lobe seizures, which can spread to the temporal lobes. Gedye notes that injuries or disorders that cause frontal lobe seizures — for instance, rubella, tuberous sclerosis, and encephalitis — are among the known causes of autism. Frontal lobe seizures, he says, may be the “final common dysfunction” that results from such brain insults—and in turn leads to symptoms of autism.

Gedye suspects frontal lobe seizures may also account for the facial, voice and body tics that characterize Tourette syndrome. The similarity of symptoms, sensations, and patterns of the two disorders is “remarkable indeed,” he says. The variety of causes of frontal lobe seizures, he adds, could explain the wide range of symptoms and severity seen in Tourette's cases.

“Frontal lobe seizures in autism,” A. Gedye, *Medical Hypotheses*, 1991, 34, pp. 174-182; and “Tourette syndrome attributed to frontal lobe dysfunction: numerous etiologies involved,” same author, *Journal of Clinical Psychology*, March 1991, Vol. 47, No. 2, pp. 233-252. Address for both: A. Gedye, Psychology Department, Woodlands, 9 East Columbia Street, New Westminster, B.C., V3L 3V5, Canada.

Skin/nervous system disorder: link to autism?

The condition known as “hypomelanosis of Ito” causes neurological symptoms and underpigmented spots or streaks on the body. The disorder is extremely rare, with only 59 cases described worldwide as of 1989, so researchers Arne Akefeldt and Christopher Gillberg of Sweden were surprised when they discovered three cases of hypomelanosis of Ito in a group of approximately 600 autistic and autistic-like individuals Gillberg is studying.

While the researchers say it is too early to draw conclusions about their finding, they recommend that all individuals with autistic symptoms be examined for hypomelanosis of Ito, using ultraviolet light. They note that two other disorders that affect the skin and nervous system — neurofibromatosis and tuberous sclerosis — also appear to co-occur with autism much more often than chance would explain.

In addition to clusters or whorls of underpigmented skin — which tend to become less obvious in adulthood — hypomelanosis of Ito is associated with central nervous system damage, early-onset epilepsy, mental retardation, and abnormalities of the eyes and skeleton.

“Hypomelanosis of Ito in three cases with autism and autistic-like conditions,” Arne Akefeldt and Christopher Gillberg, *Developmental Medicine and Child Neurology*, 1991, 33, pp. 737-743. Address: Christopher Gillberg, Department of Pediatrics and Child Psychiatry, Child Neuropsychiatry Centre, Box 17113, S-402 61 Goteborg, Sweden.

Asperger's: parents wrongly blamed

English researchers say parents of children with high-functioning autism or Asperger's syndrome may often suffer because their children are wrongly diagnosed as being emotionally or sexually abused.

M. Perkins and S. N. Wolkind report that in the past two years they have seen six children with Asperger's syndrome who were incorrectly diagnosed by a local referral center. As a result of these diagnoses of emotional abuse, the parents became “overwhelmed by guilt . . . [and] very defensive toward professionals and suspicious in their dealings with them,” the researchers note. While this behavior appeared odd or suspicious to evaluators, the researchers note, it was a natural outgrowth of their children's frustrating behaviors combined with a lack of support or understanding from professionals.

The researchers say that it can be difficult for professionals to recognize the symptoms of milder forms of autism, and that individuals with Asperger's syndrome

“can appear sociable and at times even desperate to form a relationship with the interviewer.” Closer evaluation, they say, will reveal that the child with Asperger's has “a formal concrete way of thinking and an inability to identify and understand human emotions and relationships.”

Perkins and Wolkind note that during the course of their in-depth evaluations, “the staff would change their view from puzzlement at how the parents could complain about such a child to exasperation as the repetitive unrewarding nature of the interactions undermined the attempts by nursing staff to get to know their new patient.”

The researchers stress that when children are referred for behavior problems, it is important to evaluate not only the family and social environment, but also the child's own development pattern and psychopathology.

“Asperger's syndrome: who is being abused?”, M. Perkins and S. N. Wolkind, *Archives of Disease in Childhood*, 1991, 66, pp. 693-695. Address: S. N. Wolkind, Maudsley and Bethlem Royal Hospitals, Denmark Hill, London SE5 8AZ, England.

Ascorbic acid and autism

Ascorbic acid (vitamin C) may significantly reduce autistic behaviors such as pacing, rocking, spinning and hand-flapping, according to a report by Lelland Tolbert of the University of Alabama.

In a 30-week double-blind, placebo controlled trial, Tolbert studied the effects of high doses of ascorbic acid (8 grams per 70 kilograms of body weight per day) on the behavior of 18 autistic individuals ranging in age from 6 to 19. Tests revealed a significant reduction in abnormal sensory-motor activity, but no change in affect.

High doses of ascorbic acid were used, Tolbert says, partly because “only a small portion of [ascorbic acid] systemically administered gets into the central nervous system because of the blood-brain barrier.” No adverse effects were seen.

Tolbert cites extensive evidence that ascorbic acid may blockade dopamine receptors in the brain, therefore acting in a manner similar to neuroleptic drugs such as Haldol. His own studies have shown, Tolbert says, that ascorbate can reduce drug-induced stereotypic behavior in mice, and drug-induced circling behavior in rats with lesions of the dopaminergic neurons. In addition, he notes, vitamin C appears to enhance the effectiveness of Haldol in reducing stereotypic behaviors.

“Ascorbic acid: therapeutic trial in autism,” Lelland C. Tolbert; presentation at the Autism Society of America annual conference, Indianapolis, Indiana, July 10-13, 1991. Address: Lelland C. Tolbert, Dept. of Psychiatry and Behavioral Neurobiology, Univ. of Alabama at Birmingham, UAB Station, Birmingham, AL 35294.