

## EDITOR'S NOTEBOOK/Bernard Rimland, Ph.D.

## The autism-seizure connection

## Where does LKS fit in?

Once, not so long ago, seizures were considered to be a problem somehow associated with some cases of autism, but not really a central issue. Once, seizures were thought to produce violent and highly visible grand mal convulsions, or less visible but still perceptible symptoms of petit mal, and little else. No more. In the last few years the autism world has awakened to the realization that irregularities in brain electrical activity can and do have an extremely wide range of effects, and that the familiar grand and petit mal seizures represent only the tip of a large and varied iceberg. The very real possibility has arisen that autistic symptoms may be the manifestation of sub-clinical seizures.

Looking through the back issues of the ARRI provides an interesting picture of this transformation in thought. In 1988 and 1990, we reviewed several articles which stated, "epilepsy can occur in autism in the absence of mental retardation," and "children with epilepsy were mistakenly diagnosed as autistic." By 1991 the brilliant and provocative Canadian researcher, A. Gedye, was asking if seizures might *cause*, and not merely be associated with, autism. In her paper in *Medical Hypotheses*, Gedye noted 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 may also 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.

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 observed 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, she says, may be the "final common dysfunction" that results from such brain insults—and in turn leads to symptoms of autism.

Gedye also suspects frontal lobe seizures may account for the facial, voice and body tics that characterize Tourette syndrome.

**Landau-Kleffner Syndrome.** Another piece of the autism-seizure puzzle—a piece which contributes more confusion than clarification—is Landau-Kleffner Syndrome (LKS), which has been discussed a number of times in the ARRI (5/1, 5/2, 5/4, 6/1, 9/1,2,3).

A recent review article in the *Journal of Pediatrics* (May, 1995) states that LKS is a rare disorder, and that autism is very rare among these cases.

If so, the vast majority of the 10,000 or so families who contacted Garry Stefanatos

after the *Day One* television show featured a recovered LKS/autistic boy treated at his clinic did not have children who were LKS/autistic. Further, LKS experts whom ARI has consulted tell us that the youngster featured on the *Day One* show was not a case of LKS! Confused? So are we—and so are the experts, judging from the fact that they disagree strongly with each other.

In any case, whether the numbers are great or small, there is no doubt that *some* cases of LKS—a seizure disorder—do show many symptoms of autism, and that in such cases, where treatment has been effective (and treatment is by no means invariably effective) the autism has "gone away."

**Suspect LKS in an autistic child if:**

- Normal development and age-appropriate language first 3-7 years. (In children with autistic symptoms, problems may appear before age 3.)
- Loss of receptive language while retaining some expressive language.
- "Telegraphic" speech—few verbs
- Suspicion of deafness
- Child frustrated, puzzled by change in himself
- Sleep disturbance
- Specific sleep EEG patterns characteristic of LKS

A major problem with LKS is that most pediatricians, psychiatrists, psychologists, and others who see children with late onset receptive aphasia have not heard of LKS. A great many neurologists are, unfortunately, unaware of LKS, including several neurologists whose own children were victims of LKS!

It seems that until LKS becomes better known among the professionals who diagnose autistic children, the parents of autistic children would be well advised to learn as much as they can about it in order to decide if a search for a physician qualified to diagnose LKS (no easy task!) might be warranted.

The experts agree that it is important that LKS be treated early, but there is less agreement as to the best treatment. Anti-convulsant drugs are of limited benefit, and only a small minority of cases respond favorably to surgery. Although there are no scientific studies, the prevailing opinion is that steroids, especially prednisone, are the best treatment option. Perhaps so, but steroids have serious side effects.

**Nutritional treatments for seizures.** In ARRI 8/1 we summarized a study comparing high dose vitamin B6 with steroids, the conventional treatment for seizures in infants. The researchers used 300 mg of B6 per kilogram of body weight per day, which is about 18 times as much as we, and Dr. LeLord's group in France, find to be optimal for autism. B6 proved better, and is certainly

safer, than the steroids. A large-scale follow-up was planned. I wrote to Dr. Pietz to suggest that magnesium be used along with the B6 in their forthcoming study, since, at least in the case of autism, eight controlled studies had shown the B6 with magnesium to be more effective than B6 alone. I was disappointed to learn from Dr. Pietz that his followup study had been sidetracked. It seems that the German and U.S. medical establishments share the view: "Drugs, yes; Vitamins, no."

Another very safe nutrient with anti-seizure activity is dimethylglycine (DMG) (see ARRI 4/2). A report in the *New England Journal of Medicine* (October, 1982) described a 22-year-old mentally retarded man who had 16 to 18 seizures per week on standard anti-convulsants. He experienced only three seizures per week on the DMG. Two attempts to remove the DMG dramatically increased his seizures.

In ARRI 7/1, we published a letter concerning a 41-year-old man with Fragile X syndrome who had been hospitalized with back-to-back seizures that anti-convulsant drugs could not control. At the insistence of his sister, he was placed on DMG. Three weeks after the DMG was started, he had not experienced a single seizure!

It is at least possible that the often remarkable effectiveness of vitamin B6 and magnesium, and DMG, in the treatment of autism is a result of their anti-convulsive effect. The topic cries out for research investigation, but that will probably never happen, because B6 and magnesium, as well as DMG, are natural substances, and are therefore not patentable or profitable. Research funding seems plentiful only for drugs.

**Food-caused autism/seizures.** Over-reliance on drugs has also led to the neglect of another exceedingly promising approach to seizure control. In an important but conveniently overlooked series of controlled studies (*The Lancet*, March 9, 1985; *Journal of Pediatrics*, January 1989), J. Eggers and his colleagues demonstrated that an "oligoantigenic" (few foods) diet brought about significant improvement in 62 of 76 hyperactive boys, with notable improvement in other symptoms, such as headaches, seizures, and abdominal pain. The followup study of 63 children with epilepsy also produced excellent results, with the recurrence of symptoms once the offending foods were returned to the children's diet.

It is becoming increasingly clear that abnormal electrical activity in the brain, manifested as subclinical seizures, may be playing a major role in many cases of autism. How many? And how many of these cases can be reversed by proper treatment? We don't know. But, as new studies and information become available, ARRI will keep readers updated on this important issue.

Send \$5 for ARRI information package on seizures, including LKS.