LEARNING DIFFICULTIES AND EPILEPSY

Most children living with epilepsy are of normal intelligence.

However, is estimated that approximately 30% of children with epilepsy will encounter significant learning and educational challenges. This rate of occurrence is roughly three times that of children who do not have a medical condition.

Why are some children with epilepsy vulnerable to learning difficulties?

Presence of associated brain conditions:
In all individuals, whether medically normal or not, learning disabilities are fundamentally based on irregularities in brain functions important for learning. The more extensive or severe the brain dysfunction, the more likely it is that the individual will encounter learning problems.

Thus, children with complicated or more severe forms of epilepsy, in which the epilepsy is associated with known or suspected brain abnormalities (e.g. head injury, meningitis), are particularly vulnerable to cognitive or learning difficulties. On the other hand, children with mild epilepsy, with no evidence of brain abnormality other than the tendency to seizures, are less likely to have learning problems.

Seizures:
Children having frequent seizures, especially absence seizures, can have trouble paying attention before, during and after seizures. If seizures are very frequent, they may not allow for enough recovery of normal processing between seizures.

Even when the child does not appear to be having seizures, "subclinical" seizures can be occurring in the brain, disrupting normal brain function and impacting learning. An EEG can demonstrate the presence of these abnormal electrical brain events.

For some children frequent seizures and medical investigations may result in many days of missed school, which in itself will compromise learning.

Medication:
Anti-epileptic drugs, especially when a child is taking more than one drug, can also have adverse effects on learning. Different medications will have different effects.

Some common medication side effects that can have an impact on learning are:

- Drowsiness and unsteadiness
- Difficulties in alertness and attention
- Slowing of mental processing
- Slowing of fine motor and visual motor speed

Medication may also influence mood and behaviour and thereby affect the child's ability or willingness to engage in learning activities in the classroom.

LEARNING DIFFICULTIES AND EPILEPSY

Signs that learning difficulties are a result of medication:

Difficulties happen at a particular time of day, corresponding to the peak levels of medication in the blood;

Difficulties are noticed to begin with the prescription of medication rather than the onset of seizures;

Difficulties or side effects are noticed the first one to three weeks of medication as the child develops a tolerance for the medication or when the child changes medication or increases the dosage of medication (the side effects are usually temporary).

Social-emotional:
Societal attitudes and expectations may contribute to particular difficulties with self-esteem, mood and behaviour in children with epilepsy. Teachers and parents may underestimate the abilities of these children. They may tend to restrict and overprotect them. The confidence and motivation to learn of the child with epilepsy may be diminished.

Age:
Children in whose epilepsy starts a younger age are more prone to learning difficulties.

Are children with epilepsy prone to particular types of learning problems?

Epilepsy is not a unitary condition; it is a symptom of a wide range of conditions affecting the brain. Thus, children with epilepsy will show a wide range of different types of learning problems, depending on the type of epilepsy, its cause and the brain regions affected.

However, within a particular type of epilepsy there may be similarities in the student's learning profile. An example of this is epilepsy associated with dysfunction in the left temporal lobe. Because the left temporal lobe is associated with language and verbal memory functions, children with this type of epilepsy may be prone to these types of difficulties as well as problems in related school subjects such as reading comprehension.

Children with epilepsy have been reported to be prone to difficulties in attention and memory. In part, this is likely because impairment in these global functions can be a byproduct of dysfunction in a wide range of brain systems and cognitive processes. These functions are also very sensitive to declines in the child's emotional well-being. And, seizures as well as certain types of medication or multiple medications can contribute to inattentiveness and forgetfulness.

Learning vulnerabilities of children with more severe forms of epilepsy:
As indicated above, children who are having seizures, whether overt or subclinical, are likely missing information around the period of the seizure. With more severe seizures disruptions in cognitive functioning can last for many hours after the seizure.

Children with certain epilepsy syndromes, poorly controlled seizures and who are taking multiple medications may also show progressive declines in their cognitive functioning.

As well, children with epilepsy are sometimes reported to show a puzzling variability in their understanding, at times performing normally, at others very poorly.

Strategies to improve school functioning

Assessment:
An important step in helping the child with epilepsy (or any child experiencing learning difficulties) to become a successful learner is to evaluate the nature of the difficulties. The assessment of the child should be a collaborative process, involving a number of specialists, depending on the child's needs. The school based team (principal, teachers, learning assistance teacher, speech and language therapists, physical therapists, etc.) psychologists, health professionals, parents and others may all play a potential role.

Depending on the nature and/or severity of the child's learning difficulties and seizure disorder, the learning assessment can take place at a number of levels:

- an informal assessment by the classroom teacher
- a more structured assessment (e.g., standardized tests) by the learning assistance or resource room teacher
- a formal psychoeducational assessment
- a formal neuropsychological assessment

If the child responds well to strategies derived from preliminary, less formal assessments, then there is no need to carry out formal psychoeducational or neuropsychological assessments.

However, if the child continues to experience difficulties, then further assessment will be helpful. The psychoeducational and neuropsychological assessments may help to detect the presence of specific learning disabilities as well as underlying processing difficulties.

The neuropsychological evaluation assesses functions that may not be covered in the psychoeducational assessment such as “executive”, language or memory functions. It also relates any difficulties found to medical variables such as medication and seizures. The neuropsychological evaluation can be particularly helpful in children with more severe seizure disorders or with unusual learning profiles.

Specialized assessments:
Seizure monitoring at home, in the hospital room, or in the psychology or EEG clinic while the child is carrying out psychological tests may help to define the possible role of seizures in the child's variability in learning, difficulties in information processing or attentional lapses.

Learning assessments can help the child in two major ways:

1. The assessments may result in a specific designation such as a learning, attention or intellectual disability, which may qualify the child for special services from the School District. He or she may then be given access to regular blocks of learning assistance, language support, an individual aide, specific compensatory concessions, technological support, and so on. Children, who do not meet the criteria for learning disabilities, may be eligible for extra support if they can be designated as having a chronic health impairment.
2. An Individual Educational Plan (IEP) can be developed based in part on the unique profile of strengths and weaknesses identified in the assessments. The IEP addresses a wide range of skills and functions such as attention, motor skills, academic functions, memory, organization, as well as social and emotional functioning. A guide to strategies for helping children with specific learning problems can be found at: http://www.edu.gov.on.ca/eng/general/elemsec/speced/guide.html

LEARNING DIFFICULTIES AND EPILEPSY

The IEP should, of course, take into account the particular learning vulnerabilities of children with epilepsy in relation to the impact of seizures and medication on the child readiness to engage in classroom activities at any point in time. Children with epilepsy and learning problems require more frequent review and monitoring. Periodic reevaluations should be built into the IEP. Regular communication between home and school is essential.

Learning difficulties in children whose seizures improve:
Children in whom seizure control improves show generally improved functioning and quality of life. However, they may continue to have learning problems, even after medication is discontinued and they are completely seizure-free. Although the tendency for seizures has abated in these children, the underlying or associated brain conditions may persist and thereby continue to affect learning.

These children may nevertheless benefit from re-learning topics they may have missed because of the earlier interference of seizures. In some cases, children who have had frequent seizures and have missed many days of school may benefit from repeating a year. But because underlying learning problems may persist, these children may require ongoing special support, even after they have repeated the year.

Social-emotional directions:
For children, psychosocial factors are often more difficult to handle than the seizures themselves.

To build incentive and the child's self-esteem, it is essential to acknowledge and incorporate the child's strengths into the school program.

If emotional factors are seriously detracting from a child's adaptation to school, individual therapy or counseling as well as family therapy should be considered.

In the older student or adolescent, support groups may be helpful.

Reprinted with permission of the BC Epilepsy Society