Childhood Epilepsy

Language, Learning, and Behavioral Complications

More than one-half of children with epilepsy have interrelated language, learning, and/or behavior complications. By adulthood, these problems can interfere with socialization and employment. The seizures may be controlled, but the developmental distortions can continue to present problems for health and education systems and carers. In this comprehensive and fully referenced book, William Svoboda distills a lifetime of clinical experience with childhood epilepsy into three areas that address each of the main areas of difficulty. In each, he looks at why the problems arise and assesses diagnostic and remedial approaches. The focus is on the whole care of the child rather than on diagnosis, classification, and medication alone.

Clinicians, mental health practitioners, educators, and speech and language pathologists will find this book invaluable.

William B. Svoboda was Associate Clinical Professor of Pediatrics at the University of Kansas School of Medicine. He was also founder and director of the Via Christi Epilepsy Center Program. He has received grants for his work on institutionalized individuals with epilepsy, and he was appointed to the Federal Commission on Epilepsy and its Consequences, also serving on the subsection on institutionalized care. He is a former president of the Kansas branch of the Epilepsy Foundation of America.

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Not all children with epilepsy have the associated
problems of language and/or learning and/or behavior . . .
but some do . . .
and some will.

It is especially to help those that this book is dedicated.

The purpose of this text is to promote awareness and
help for such problems.

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Preface

I am struck by the debates over issues in epilepsy. The literature suggests that for every article, there is an equal and opposite article, and for every finding of the existence of a problem, there is one denying the existence. With therapies, there are three sides to the argument: those claiming that a drug produces a problem, those denying any relationship between the therapy and the problem, and those proclaiming that the drug may help with the problem. Some spend more time criticizing the efforts of others than contributing insight or explanations. Thus, the reader is left with more references arguing about than explaining the reason for such problems.

The emotional biases often show up in both authors and readers, both of whom tend to find what they seek. Those who deny the existence of a complication tend not to find it. Those who worry about the coexistence of complications often find it or else create it in their own view.

The reality is that many individuals do not have the problems that are ascribed to epilepsy. However, the incidence is sufficient enough to state that some do beyond mere chance. Why do some children have the problem? What can be done to prevent or to overcome such difficulties?

Glossary

The following are simplified, working definitions, not technical definitions. For each deficit of function, generally there may be a near-total loss, or a partial loss/distortion of the skill being described, the prefix "a" signifying the former (as in aphasia, anomia, agnosia) and the prefix "dys" signifying the latter (as in dyslexia, dysphasia, dyscalculia).

Modifiers

Cause: An impaired or lost function may be "acquired," i.e. the result of an insult or damage to the brain, or may be "congenital" or "developmental," i.e. an impairment of the ability to develop the function.

Degree: The prefix "a" (as in aphasia) usually implies a loss of function, but in the developing child it may also mean a lack of the ability to develop the skill.

Timing: A disturbed function may be episodic, as with an episodic aphasia. If such an episode is due to a seizure, then it is a paroxysmal aphasia.

Terms

Absence seizures: A generalized seizure manifest predominately by a brief pause and staring, sometimes with minor rhythmic movements. There is no warning and the child usually resumes the preceding activity at the end of the attack.

Acquired: A loss of a function due to brain damage, as opposed to congenital or developmental.

Agnosia: Inability or impairment in recognition of incoming sensory stimuli.

Anarithmia: A deficiency in mathematic skills that can affect any of multiple areas, including calculation (dyscalculia), math table memory, reading, recognition of mathematical symbols (numbers, operational signs, words), and perceptual-spatial awareness, such as in borrowing and carrying.

Anomia: Memory problems for proper names, names of items, etc.

Anosognosia: Unawareness or denial of a neurologic dysfunction or handicap.

Aphasia/dysphasia: Loss or lack of understanding of meanings of speech or of what is said, or difficulty in expressing one's thoughts through spoken or written language.

Aphasia, acquired: Loss of understanding of meanings of speech or of what is said, or difficulty in expressing one's thoughts through spoken or written language due to damage or destruction of a vital language-processing center.

Aphasia, congenital: Lack of acquisition of speech skills due to a developmental inability to understand or lack of expression of speech due to the underdevelopment of a vital language-processing center, usually bilaterally.

Aphasia, expressive: Loss of understanding of meanings of speech or of what is said, or difficulty in expressing one's thoughts through spoken or written language due to damage or destruction of Broca's area in the posterior inferior frontal lobe involving the dominant hemisphere.

Aphasia, receptive: Loss of understanding of meanings of speech or of what is said, or difficulty in expressing one's thoughts through spoken or written language due to damage or destruction of Wernicke's area in the temporal-parietal junction of the dominant hemisphere.

Aphasic dyslexia: An impairment in attaching meanings to words when reading, often linked with a more generalized aphasia.

Apraxia/dyspraxia: Loss of the ability to translate a response concept into a motor act, such as speech, writing, or gesturing.

Arrest, speech: The abrupt, transient interruption of the neurologic function of speech.

Astatic seizures: An old term for generalized seizures characterized by a loss of balance.

Atonic seizures: Generalized seizures in which the patient's head or body drops.

Auditory agnosia: The state of being confused and unable to recognize speech sounds or other familiar sounds.

Broaca's aphasia: See *expressive aphasia.*

Choreoathetoid: Twisting, turning, and jerking movements.

Complex partial seizures: Partial seizures usually involving the frontal or temporal lobes, presenting with initial partial loss of consciousness and automatic behaviors, followed by amnesia for the event.

Congenital neurologic problem: A deficient development of a neurologic function due to a perinatal (around the time of conception through neonatal period) brain insult, usually bilateral. The term is often used interchangeably with developmental neurological problem.

Corpus callosotomy: A surgical procedure in which the corpus callosum connecting the two brain hemispheres is cut partially or completely to prevent seizure spread.

CSWS: Continuous spike-wave status in sleep.

Deafferentation: The disconnection of incoming nerve connections from a site in the brain.

Developmental neurologic problem: A deficient development of a neurologic function due to a perinatal (around the time of conception through neonatal period) brain insult or deficiency, usually bilateral. The term is often used interchangeably with congenital neurologic problem.

Developmental (or congenital) dyslexia: A developmental impairment in reading, which may be inherited and seen in other family members.

Dextral: Right-handed.

Dysarthria/anarthria: A neurologic difficulty in the formation and pronunciation of speech sounds and words.

Dysarticula, articulation problems: A mechanical impairment of clear formation and pronunciation of speech sounds and words, usually due to a muscular or structural problem of the mouth or throat.

Dyscalculia/acalculia: Deficient or lack of ability to calculate, as in math. See also *Anarithmia.*

Dysfluency: A neurologic impairment resulting in the break-up of the normal flow of speech, such as with stuttering or stammering.

Dysfunction: The partial loss or distortion of a language or cognitive function as opposed to a complete loss, as with dysphasia/aphasia, dyslexia/alexia, etc.

Dysgraphia/agraphia: Deficient or distorted ability to write.

Dyslalia: Impairment of utterances, with abnormality of the external speech organs.

Dyslexia/alexia: Deficient, distorted ability in reading for comprehension. Commonly expanded in definition to imply an inability to read, spell, and write words despite the ability to see and recognize letters. There are many types of dyslexia, the most common of which are *aphasic dyslexia*, *developmental dyslexia*, perceptual dyslexia and *verbal, phonic or*, *auditory dyslexia.*

Dysorthographia: Deficient or distorted ability to spell.

Dysphasia: A partial loss or distortion of understanding or expression of language.

Episodic dysfunction: A brief episode of dysfunction, as with an episodic aphasia, dyslexia, etc. due to some insult the brain that temporarily impairs function of the related brain area.

Generalized tonic–clonic seizures: Generalized seizures with loss of consciousness at the onset, manifesting tonic stiffening and/or clonic repetitive jerking movements.

Hemidecorticectomy and hemispherectomy: Related surgical procedures in which much or all of the cortex or hemisphere is removed from one side of the brain in order to halt progressive degenerative seizures.

Infantile myoclonic spasms: A seizure syndrome of infancy marked by the onset of repetitive brief flexing or stiffening movements, at which time intelligence declines and the EEG shows a hypsarrhythmic pattern (high-amplitude, disorganized appearance, with multifocal spikes and occasional brief generalized suppression of activities).

Learning disability: A specific learning disability is a disability of one or more of the basic learning processes involved in the understanding or using of spoken or written language, manifest by an inadequate ability to listen, think, speak, read, write, spell, or do mathematical calculations. This includes disorders such as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such terms do not include children who have learning problems that are primarily the result of visual, hearing, or motor handicaps, mental retardation, emotional disturbances, or environmental disadvantages. (Such children demonstrate a discrepancy between expected and actual achievement expected for their overall mental age, commonly interpreted as meaning two standard deviations below normal.) (Adopted from Public Law 91-230, Section 602-15, Federal Department of Health, Education & Welfare, USA.)

Learning handicap, specific:

A seldom applied concept that indicates that the child who has a specific learning disability is handicapped in efforts to perform the task impaired by the learning disability, such as reading, writing, spelling, math, etc.

Learning problem: A non-specific term applied to any child who has difficulty in performing in school.

Lennox–Gastaut syndrome: A seizure syndrome of childhood onset marked by the appearance of mixed generalized seizures, mental deterioration, and a generalized slow spike-wave EEG appearance.

Mutism: Lack of speech or speech efforts.

Myoclonic seizures: Generalized seizures manifest as a jerk of a part or all of the body.

Neologism: The inadvertent creation of new words.

Paraphasia: A form of aphasia in which the patient uses wrong words or uses words in wrong and senseless combinations.

Paroxysm: A sudden occurrence of a symptom, such as with a spasm or a seizure.

Paroxysmal disturbance: A severe interference with a language or cognitive processing function associated with seizures. This may include transient aphasias and transient reading disorders.

Perceptual dyslexia: Confusion of similar letters and words, impairing the reading process.

Positron emission tomography (PET) scan: An isotopic brain scan that measures positrons emitted by a variety of radioisotopes injected into the bloodstream to measure chemistry and metabolism of areas of the brain.

Pragmatism: The use of language in terms of rules of usage, word meanings, and fitting together of words so as to communicate in an understandable, acceptable way.

Prosody: The character of spoken language that reflects the emotional aspects of speech, characterized by changes in pitch, tempo, inflection, and stresses in spoken efforts.

Pyramidal signs: Signs such as spasticity, hyperreflexia, and Babinski signs caused by impairment of the pyramidal tracts of the spinal cord.

Regression: The loss of a previously attained skill, such as a speech or language regression.

Retardation, mental: Overall intelligence of at least three standard deviations (borderline) below the average. Retardation may be borderline (overall intelligence at least two standard deviations below average but less than three standard deviations below normal), mild (overall intelligence roughly one-half to two-thirds normal), moderate (overall intelligence roughly one-quarter to one-half normal), or severe (overall intelligence below one-quarter normal).

Simple partial seizures: Seizures beginning in a part of the brain with intact consciousness at the onset, usually presenting with a movement, sensation, emotion, or memory. These may be auras progressing on to another seizure type.

Sinistral: Left-handed

Syntax: The way words are traditionally assembled into phrases and sentences.

Utterances, vocal: Uncontrolled uttering of non-speech sounds or single words, as during a seizure.

Verbal agnosia: Confusion or inability to recognize words.

Verbal, phonic, or auditory dyslexia: Confusion of letter or word sounds or problems in developing phonetic approaches to the recognition and understanding of words and their meanings.

Verbosity: An excessive use of words.

Wernicke's aphasia: See *receptive aphasia.*