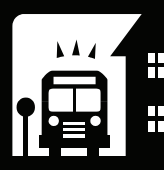




Tips for Home or School

Cortical Visual Impairment

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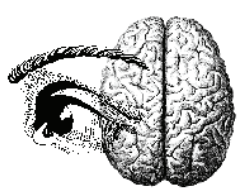


January 2003

Purpose of this Tip Sheet

After reading this fact sheet you will have an understanding of:

- What is cortical visual impairment (CVI)
- Causes of CVI
- How CVI is identified
- Characteristics of CVI
- Implications of CVI



include cerebral palsy, epilepsy, hydrocephalus, severe to mild learning difficulties, and seizures.

Characteristics of CVI

Children with CVI display a number of specific behaviors. Understanding these specific behaviors will assist individuals in appropriate interactions and interventions with children who have CVI. The following checklist will help to identify these specific behaviors; however, it is important to remember that children with other types of visual impairments may exhibit some of these characteristics as well. Please review Figure 2 on page 3 for characteristic differences between "pure" ocular and cortical visual disorders. While reviewing the checklist, here are some important facts to keep in mind about CVI

- CVI can range from mild to severe.
- CVI can range from temporary to permanent.
- Many children experience improvement.
- Children with CVI can also have ocular (or eye) difficulties as well.
- Fluctuation is common.
- Characteristics can vary from child to child.
- A single approach does not work for all children.
- Children with CVI typically have some vision.

What is Cortical Visual Impairment (CVI)?

CVI refers to a brain condition, not an eye condition and results from damage to the visual systems in the brain that deal with processing and integrating visual information. CVI can be a temporary or permanent impairment and can range from severe visual impairment to total blindness. Because CVI is a neurological impairment, vision is more severely reduced than can be explained by an eye exam. The degree of the impairment depends on the age of onset as well as the location and severity of the impairment in the visual pathway. CVI is referred to by many different names including cortical blindness, cerebral blindness, central visual disturbance, and cerebral visual impairment.

Causes of CVI

The causes of CVI are varied (see Figure 1) with the most common causes being hypoxic or anoxic brain damage. Hypoxic brain damage results from the **reduction** of oxygen supply to a tissue, which can occur from cardiac arrest, resuscitated drowning, near miss S.I.D.S. (Sudden Infant Death Syndrome), and prolonged epileptic seizures. Anoxic brain damage results from the **absence** of oxygen supply to tissues and can result from asphyxia.

Figure 1. Common Causes of CVI

- Hypoxic brain damage
- Anoxic brain damage
- Developmental brain defects
- Head injury
- Infections of the central nervous system (e.g., meningitis & encephalitis)
- Intrauterine infections (i.e., TORCH)
- Progressive disorders (e.g., Tay Sachs)
- And others

Associated Diagnoses

Most children with CVI have other associated neurological problems. The most common of these



Characteristics of CVI

Appearance	
<input type="checkbox"/> Does not look blind	<input type="checkbox"/> Blank facial expression
<input type="checkbox"/> Lack of visual communication skills	<input type="checkbox"/> Eye movements smooth, but aimless
<input type="checkbox"/> Nystagmus (rapid eye movement) rarely seen	
Vision Function	
<input type="checkbox"/> Visual function varies day to day/hour to hour	<input type="checkbox"/> Balance improved with eyes closed
<input type="checkbox"/> Limited visual attention & lack visual curiosity	<input type="checkbox"/> Looks away from people and objects
<input type="checkbox"/> Aware of distant object, but cannot identify	<input type="checkbox"/> Spontaneous visual activity has short duration
<input type="checkbox"/> Consistently looks to either side when visual looking	<input type="checkbox"/> When visually reaching, looks with a slight downward gaze
<input type="checkbox"/> Visual learning tiring	<input type="checkbox"/> Uses touch to identify objects
<input type="checkbox"/> Closes eyes when listening	<input type="checkbox"/> Turns head to side when reaching, as if using peripheral fields, or motion detection
Mobility Skills	
<input type="checkbox"/> Occasionally sees better traveling in a car	<input type="checkbox"/> Unable to estimate distances
<input type="checkbox"/> Difficulties with spatial interpretation	<input type="checkbox"/> Difficulties with depth perception, inaccurate reach
<input type="checkbox"/> Avoids obstacles, but unable to use vision for close work	
Improved Visual Performance When . . .	
<input type="checkbox"/> In familiar environments	<input type="checkbox"/> Using familiar objects
<input type="checkbox"/> Told what to look for & where to look	<input type="checkbox"/> Objects are held close to eyes when viewing
<input type="checkbox"/> Objects are widely spaced	<input type="checkbox"/> Looking at one object vs. a group of objects
<input type="checkbox"/> Color is used to assist in identification of objects or shapes	<input type="checkbox"/> Objects are against a plain background and paired with movement and sound
<i>Chart taken from Vision Associates, 7512 Dr. Phillips Blvd., #50-316, Orlando FL 32819, (407) 352-1200</i>	

Figure 2. Some Characteristic Differences Between Pure Ocular & Cortical Visual Disorders		
Characteristics	Ocular Disorder	Cortical Disorder
Eye examination	Usually abnormal	Normal
Visual function	Consistent	Highly variable
Visual attention span	Usually normal	Markedly short
Sensory nystagmus	Present when congenital & early onset	Not present
Poorly coordinated eye movements	Present when congenital & early onset	Usually normal
Rapid horizontal head shaking	Occasionally	Never
Compulsive light gazing	Rarely	Common
Light sensitivity	Dependent on the eye disorder	In 1/3 of the cases
Eye pressing	Especially in congenital retinal disorders	Never
Close viewing	Common, used for magnification	Common, used for magnification, a reduction in crowding, or both
Color perception	Dependent on the eye disorder	Preserved
Appearance	Appears visually impaired	Usually normal
Peripheral field loss	Occasionally	Nearly always
Presence of additional neurological handicaps	Fairly common	Nearly always
From: Jan, J. E. & Groenveld, M. (1993). Visual behaviors and adaptations associated with cortical and ocular impairment in children. <i>Journal of Visual Impairment and Blindness</i> , 87, 101-105.		

Strategies for Interacting with a Child Who Has CVI

Research has shown that visual attention is trainable where there is usable vision. In other words, children with vision impairments whose development is delayed need increased stimulation and interaction based on their residual vision. Strategies that can be adapted to the specific needs of children who have CVI include:

- Use simple cues (e.g., touch cues, object cues).*
- Avoid figure-ground clutter.
- Use repetition & familiar routines.
- Avoid extra, unnecessary stimulation.
- If possible, pair visual information with other sensory cues.
- Do not over-stimulate the child with visual clutter
- Be aware of visual preferences.
- Allow the child to avoid visual gaze if necessary.
- Be aware of other “drains” on energy.
- If needed, adapt the setting to reduce noise clutter, over-stimulating lighting, & other distracters.
- Sometimes moving an object will help the child to see the object better.
- Use real objects rather than abstract symbols (e.g., an orange vs. a circle).
- Use active rather than passive learning.
- Five environmental areas that can be changed to encourage children to use their vision:
 - ◆ Color (bright vs. bland)
 - ◆ Contrast (high vs. low)
 - ◆ Lighting (use lighting cues--e.g., shining a flashlight on an object)
 - ◆ Space/Distance
 - ◆ Time (wait!)

* See project tip sheet on *Using Cues to Enhance Receptive Communication*.

