

# Visual disorders

**Our vision is a sophisticated complex of subsystems involving the flow and processing of information to the brain. A brain injury can disrupt this visual process.**

Individuals may have focusing problems, eye muscle coordination deficits, changes in eyeglass prescription, and peripheral vision changes. The type and extent of any visual problem depends on the severity and location of the injury. Even when visual problems are diagnosed there is often little vision rehabilitation offered. This is unfortunate as treatment often provides relief from visual symptoms.

Some symptoms to look for are:

- Headaches from visual tasks
- Blurred or double vision
- Sensitivity to light
- Inability to concentrate or focus
- Reading or comprehension difficulties
- Trouble judging distances
- Sore eyes
- Loss of visual field.

If you find it difficult to process visual information you may be straining without realizing it. A general sense of fatigue can arise from visual problems.

## **CAUSES**

Trauma can cause damage to parts of the brain responsible for visual information processing. Even if the head does not hit anything, whiplash can cause damage. Trauma may injure arteries, stretch nerves or damage the vertebral column itself. It can also create soft tissue damage that may cause eye muscle coordination problems and symptoms that patients experience.

## **COMMON VISUAL PROBLEMS**

### **Dry eyes**

This can result when nerves or muscles of the eyelids are affected. Symptoms are often relieved with the use of the correct eye drops. In bad cases plugs placed in the tear ducts can solve the problem.

### **Double vision**

This condition may cause confusion and disorientation. Individuals experiencing this condition are often given an eye patch to cover one eye although it reduces the field of vision and interferes with daily function. Double vision can often be prevented without an eye patch, through the use of prisms and vision therapy. Prisms are used to shift objects in the field of vision. They can correct problems between body image and perception of space.

### **Loss of visual field**

This loss is a common visual effect of brain injury. There are many kinds but the most common is loss of half of the field of vision in each eye. People frequently bump into objects, and easily trip or fall over objects. They may be afraid of leaving home and have difficulty reading. Therapy can help to detect objects on their 'blind side' and use constant scanning to compensate. Compensatory strategies are useful such as always aligning oneself to objects or people so they are centered in the remaining visual field. Prisms and mirror devices are often helpful in cases of visual field loss. Tiny mirrors

attached to glasses can expand visual field awareness. If there is some remaining vision, stimulatory exercises can be used to increase light sensitivity and regain some lost function.

### **Reading difficulties**

These may arise from blurred or double vision, jerky eye movements, or visual field loss. Treatment can involve aids such as prisms or using a typoscope to focus on individual sentences. After injury, it can be hard to focus on a page due to nerve damage that affects the eye's refocusing. Bifocal glasses can compensate.

Eye movements can be impaired by brain injury which may prevent smooth reading along the page. Therapists may be able to rebuild reading skills to reduce problems such as this.

### **Low vision**

Following a brain injury some people have a normal field of view but can't read print or watch television with conventional glasses because of low vision. Low vision aids include telescopic lenses for distance vision and a range of magnifying aids for reading and other fine tasks.

### **Photosensitivity**

Light sensitivity varies from person to person. Some have no trouble but others find bright light painful. Solutions may include tinted eyewear, or amber filters. Sometimes treatment for other problems will reduce photosensitivity.

### **Hallucinations**

Visual hallucinations may be formed objects such as a person or figure or may be unformed such as flashes of lights, stars or flickering distortions.

### **Impaired visual memory**

Memory is often impaired after stroke or head injury. In rare cases very specific types of memory processing are impaired. A person may no longer be able to recognize faces, objects or letters.

### **Vision rehabilitation**

After a brain injury some people experience a natural recovery usually within six months. This recovery can be assisted with use of any necessary prescription lenses. Some people will not recover naturally but may do so with vision therapy. Studies show that vision therapy hastens natural recovery as well.

A clinician skilled in both low vision and brain injury will understand the interaction of these problems and be able to make a plan to rehabilitate the visual system. After evaluation, examination and consultation, a clinician will determine how a person processes information after an injury and where that person's strengths and weaknesses lie. They provide treatment designed for each individual and frequently incorporate combinations of lenses, prisms, low vision aids, and vision therapy activities. The road to recovery needs the teamwork of many doctors and therapists with time and patience throughout the rehabilitative process.

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