

Review article

Low vision rehabilitation An update

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Abstract

This article provides information concerning issues related to the care of individuals who are visually impaired. Issues reviewed include determining who should be referred for vision rehabilitation services, Charles Bonnet syndrome, visual acuity, contrast sensitivity and visual field testing along with Useful Field of View testing. This article also discusses technology advances that can enhance the visual functioning of individuals who are visually impaired, including how these advances can help drivers with visual impairments to continue to safely operate motor vehicles, at least on a limited basis. Finally, resources that are available to both encourage and motivate patients to take advantages of vision rehabilitation services are reviewed.

Keywords: Visual impairment, Low vision rehabilitation, Charles bonnet syndrome, Useful field of view

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Introduction

In the past, low vision was defined by visual acuity of 20/70 (6/21) or less.^{1–3} The problem with this numeric definition is that it did not take into account the functional problems many individuals with better than 20/70 vision have with conditions that cause glare and/or contrast loss that are not evident during high contrast visual acuity testing routinely performed by eye care providers. As a result of this, the National Eye Institute adopted a functional definition of low vision.⁴ Based on this functional definition, low vision rehabilitation care is more inclusive now than in the past, encompassing the management of individuals of all ages, who have a congenital or acquired impairment of visual acuity and/or visual field and/or other functionally disabling factors, in the better seeing eye, in which the loss of vision interferes with the process of learning, vocational or avocational pursuits, social interaction, or the activities of daily living. This

vision loss is not correctable by standard glasses, contact lenses, medicine, or surgery.

Low vision rehabilitation should be considered part of the continuum of eye care that includes refractive, medical and surgical eye care, which begins at birth and carries forward throughout life. The goal of vision rehabilitation is to maximize an individual's functional vision. In so doing, the individual's functional potential will be enhanced, resulting in increase independence and improved quality of life.

Vision rehabilitation often requires a team approach. The vision rehabilitation team may include, but is not limited to, medical, optometric, allied health (Occupational Therapist/Physical Therapist), social, educational/rehabilitative, mobility and psychological services. Potential additional team members may include psychologist, speech and hearing specialist, nurse/nurse educator and adaptive/technology consultant. The vision rehabilitation team is lead by the vision rehabilitation doctor – an optometrist or ophthalmologist

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(OD, MD, DO) with special training and interest in the care of individuals who are visually impaired.

Who needs vision rehabilitation services?

Roy G. Cole, OD⁵ developed the following simply screening protocol for determining who needs vision rehabilitation services. The following series of questions allows rapid screening of individuals to determine if they would benefit from vision rehabilitation services.

- Do you have trouble doing what you want to do because of your vision? For example:
 - Reading your mail?
 - Watching television?
 - Recognizing people?
 - Paying your bills?
 - Signing your name?
 - Walking stairs, curbs, crossing the street or driving?
- During the past month, have you often been bothered by:
 - Feeling down, depressed or hopeless?
 - Having little interest or pleasure in doing things?

These last two questions are ~90% effective in detecting depression.⁶ It is important to be aware that depression is not uncommon among the elderly in general. Up to 3% experience major depression, with another 8–16% experiencing clinical depressive symptoms.⁷ However, the risk of depression in those with vision loss increases significantly, with some studies suggesting there is a 4-fold increase in developing depression in those with vision loss.⁸

If the answer to any of the above 8 questions is “yes,” and these difficulties cannot be ameliorated refractively, medically and/or surgically, the patient should be referred for additional vision care and/or low vision rehabilitation services and/or counseling, education and/or problem-solving therapy services.

History taking

An often-unrecognized issue experiencing by individuals with vision loss is the phantom vision condition known as Charles Bonnet Syndrome (CBS), a condition that may represent a type of release or deprivation phenomenon in those with sudden, and, or severe, acquired vision loss. Bonnet first described CBS in 1760s when he noted the symptoms in his visually impaired grandfather.⁹ Core features of CBS include vivid and complex hallucinations that are usually recognized as unreal by the patient and occur in the absence of any other psychiatric syndrome. Images that have been described by patients include dwarf people, animals, plants, buildings and scenery. These images may be static or moving. The images may have no personal meaning and last for a few seconds to most of a day and can occur for a few days to several years. Often the images may change in frequency and complexity. For some patients, the onset of visual hallucinations can be distressing without knowledge that this is a known association of vision loss. Therefore, direct questioning, education, and reassurance are important when treating patients with vision loss at risk for CBS. Others describe the images as interesting. The images are exclusively visual, making no noise and causing no other sensations, unlike hallucinations

associated with more concerning neurological diseases such as Alzheimer’s, Parkinson’s, or psychosis which will have associated sounds or smell.¹⁰

The cause of CBS is unknown. Zuckerman and Cohen¹¹ reported that 19% of normal individuals experienced visual hallucinations during sensory deprivation experiments. Common factors associated with CBS are sensory deprivation (bilateral vision loss), social isolation, advanced age (mean age 75.7 years) and the experience of a recent loss of vision.¹²

It is important to know about CBS because it occurs in up to 38% of patients with age-related macular degeneration.¹³ A study done at the Henry Ford Health System Vision Rehabilitation Research Center found that those experienced CBS images initially do not admit to them when questioned.¹³ Yet, all patients welcomed validation of their experience and the opportunity to describe their images when subsequently questioned.

Many patients choose to keep their experience of seeing objects they know are not real concealed, for fear others would believe they were mentally compromised or developing dementia. With this in mind, Menon suggested the use of indirect or direct questioning to detect CBS¹⁴:

- (Indirect question) Apart from blurred vision, have you noticed anything unusual about your vision? Have you had any unusual visual experiences?
- (Direct question) It is well known that some people with blurred vision can sometimes see things that they know are not real. Have you experienced anything like this?

Reported visual hallucinations should not be disregarded altogether, because they can signal the presence of undiagnosed organic pathology (tumor or lesion), untreated mental disorder and/or possible substance abuse. Finally, it is important to know that a reduction in visual acuity alone cannot be the sole source of CBS because not all individuals who are visually impaired have hallucinations.¹⁵

Currently, there is no effective treatment for CBS. For most, management that includes physician recognition, empathy, reassurance and patient education are enough to help the patient and form the cornerstone of treatment for CBS. When patients are increasingly affected by CBS, a referral for psychological counsel can help as well as addressing social factors since we know isolation can affect the occurrence. Pharmaceutical agents are rarely effective.¹⁵

Visual acuity testing (Distance and Near)

Accurately measuring visual acuity is important for determining best-corrected acuity with refraction; monitoring the effect of treatment and/or progression of the disease, and to estimate the dioptric power of optical devices necessary for reading regular size print. Additionally, visual acuity testing is used to verify eligibility for tasks such as driving and to verify eligibility as “legally blind.” Inaccurately measuring visual acuity underestimates ability.

It is important to realize that when we test visual acuity, we are only quantifying the degree of high contrast vision loss. Visual acuity testing does not tell us about the individual’s quality of vision. A person’s quality of vision is determined

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