Convergence Insufficiency

What is convergence insufficiency?

Convergence insufficiency is the inability to maintain binocular function (keeping the two eyes working together) while working at a near distance. Typically, one eye will turn outward (intermittent exotropia) when focusing on a word or object at near.

What is the difference between convergence insufficiency and exotropia?

In convergence insufficiency, eye misalignment occurs when focusing at near. Occasionally, a well-controlled intermittent exotropia (outward eye turning) will be present at near and distance in a patient with convergence weakness; however, in convergence insufficiency the deviation is symptomatic and occurs spontaneously only when focusing on near objects.

What are the symptoms resulting from convergence insufficiency?

Symptoms of convergence insufficiency include diplopia (double vision) and headaches when reading. Many patients will complain that they have difficulty concentrating on near work (computer, reading, etc.) and that the written words will move around and become blurry after prolonged periods of reading. Patients may be noted to squint or close one eye when reading. Symptoms can vary with convergence insufficiency and not all symptoms are present in every patient.

How should a patient be tested for convergence insufficiency?

Convergence insufficiency is diagnosed by an ophthalmologist, optometrist or orthoptist after obtaining a history of the patient's symptoms and measuring convergence ability. The examination includes determining the distance from the eyes that the patient can hold the eyes together without double vision (near point of convergence) and the amount of prism that can be placed in front of the eyes at a particular distance before double vision is seen (fusional vergence amplitude). Presence of any refractive errors, eye muscle dysfunction, or weaknesses in accommodation (near focusing) should also be evaluated.

Does every patient who meets criteria for convergence insufficiency require treatment?

During a routine eye examination, convergence weakness may be diagnosed even without the above-mentioned symptoms. Some patients test in the office as having poor convergence; however, they are asymptomatic. This may be the result of true convergence weakness, but is often found when the patient is distracted, shy, overly excited or does not understand the

directions given. These patients should either be retested at another time or simply watched for symptoms of diplopia or headaches with near work. A patient who is not having difficulty with near tasks but tests positive for convergence insufficiency in the office does not require any treatment but should be followed.

Conversely, a child with adequate convergence in the office may occasionally have symptoms at home or school consistent with convergence insufficiency. In these cases, a course of treatment for convergence weakness can be instituted and the child followed for improvement in symptoms.

What is the method of treatment for convergence insufficiency?

Convergence insufficiency can often be treated by practicing convergence through exercises. These exercises may be prescribed by an orthoptist (a medical technician who is specifically trained in ocular muscle function and binocular vision) or by an ophthalmologist. There is also a computer program available which may be used on a home computer to increase convergence ability. The results of the computer program are often followed by your eye care professional with print outs that can be brought in to the office visit.

Which method of treatment will be used for an individual patient depends on the age of the patient requiring treatment, the proximity to an orthoptist or vision therapist and the preference of the patient. Important aspects to consider in choosing a treatment regimen are the convenience and expense of treatment as any method chosen tends to be successful if the prescribed regimen in followed. Most studies show that a short course of treatment is usually successful. Prolonged therapy does not show significant advantages and is usually unnecessary.

Can glasses or patching be used to treat convergence insufficiency?

One method of therapy to resolve convergence insufficiency is the use of base-out prisms which force the system to work harder to converge. They are used only during short periods of time while performing therapy as they are very tiring to the eyes.

Base-in prisms can be used to artificially align the eyes for reading; however, their use will make it unlikely that the patient will develop stronger convergence on their own.

Patching is not an option to strengthen convergence because wearing a patch will disrupt any ability to exercise binocular function (use the two eyes together). Occasionally, patients will patch one eye temporarily in order to relieve double vision during times when a large amount of near work is required.

Is convergence insufficiency treatment always successful?

Occasionally, a patient will not respond to therapy. In these cases, prism glasses may be used for reading in order to artificially align the eyes and allow for more comfortable binocular vision. In rare cases, surgical intervention may be suggested.

Is convergence insufficiency permanent?

Patients with convergence insufficiency are often permanently cured after exercises to strengthen their convergence. Continued near work following convergence therapy tends to help maintain adequate convergence once treatment is discontinued. At times, convergence insufficiency symptoms will resurface after illness, lack of sleep or increased near work demands. If treatment had been successful previously, an additional course of treatment tends be successful at resolving recurrent symptoms.

Are there associated problems with vision in patients with convergence insufficiency?

Patients with convergence insufficiency usually have a normal range of refractive errors and good visual function. Testing for accommodative amplitude (the ability to focus each eye individually at near) is always performed by the specialist evaluating convergence. Rarely, this is also found to be weak. If both accommodation and convergence are weak, reading glasses, sometimes with prism added, may be a great option for these patients. It is very difficult to improve accommodation with exercises.

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