



REVIEW

Symptomatology associated with accommodative and binocular vision anomalies



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Vision disorders;
Visual symptoms

Abstract

Purpose: To determine the symptoms associated with accommodative and non-strabismic binocular dysfunctions and to assess the methods used to obtain the subjects' symptoms.

Methods: We conducted a scoping review of articles published between 1988 and 2012 that analysed any aspect of the symptomatology associated with accommodative and non-strabismic binocular dysfunctions. The literature search was performed in Medline (PubMed), CINAHL, PsycINFO and FRANCIS. A total of 657 articles were identified, and 56 met the inclusion criteria.

Results: We found 267 different ways of naming the symptoms related to these anomalies, which we grouped into 34 symptom categories. Of the 56 studies, 35 employed questionnaires and 21 obtained the symptoms from clinical histories. We found 11 questionnaires, of which only 3 had been validated: the convergence insufficiency symptom survey (CISS V-15) and CIRS parent version, both specific for convergence insufficiency, and the Conlon survey, developed for visual anomalies in general. The most widely used questionnaire (21 studies) was the CISS V-15. Of the 34 categories of symptoms, the most frequently mentioned were: headache, blurred vision, diplopia, visual fatigue, and movement or flicker of words at near vision, which were fundamentally related to near vision and binocular anomalies.

Conclusions: There is a wide disparity of symptoms related to accommodative and binocular dysfunctions in the scientific literature, most of which are associated with near vision and binocular dysfunctions. The only psychometrically validated questionnaires that we found ($n=3$) were related to convergence insufficiency and to visual dysfunctions in general and there no specific questionnaires for other anomalies.

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PALABRAS CLAVE

Acomodación;
revisión de la
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visión binocular;
anomalías visuales;
síntomas visuales

Sintomatología asociada a las anomalías acomodativas y de la visión binocular**Resumen**

Objetivo: Determinar los síntomas asociados a las disfunciones acomodativas y binoculares no estrábicas, y evaluar los métodos utilizados para la obtención de los mismos.

Métodos: Se realizó una revisión bibliográfica acotada de los artículos publicados entre 1988 y 2012 que analizaban cualquier aspecto de la sintomatología asociada a las disfunciones acomodativas y binoculares no estrábicas. La búsqueda se realizó en Medline (PubMed), CINAHL, PsycINFO y FRANCIS. Se identificaron un total de 657 artículos, de los que 56 cumplieron los criterios de inclusión.

Resultados: Se encontraron 267 formas diferentes de nombrar a los síntomas relativos a estas anomalías, que se agruparon en 34 categorías de síntomas. De los 56 estudios, 35 utilizaron cuestionarios y 21 de ellos obtuvieron los síntomas de las historias clínicas. Se encontraron 11 cuestionarios, de los que sólo 3 habían sido validados: el cuestionario Convergence Insufficiency Symptom Survey (CISS V-15) y su versión previa CIRS, ambos específicos para la insuficiencia de convergencia, y cuestionario de Conlon, desarrollado para anomalías visuales en general. El cuestionario más ampliamente utilizado (21 estudios) fue el CISS V-15. De las 34 categorías de síntomas, las más frecuentemente mencionadas fueron: dolor de cabeza, visión borrosa, diplopía, fatiga visual, y movimiento o parpadeo de las palabras en la visión de cerca, que se relacionaron fundamentalmente con la visión de cerca y las anomalías binoculares.

Conclusiones: Existe una gran disparidad de síntomas en relación a las disfunciones acomodativas y binoculares en la literatura científica, muchos de las cuales se asocian a la visión de cerca y a las disfunciones binoculares. Los únicos cuestionarios psicométricamente validados (n=3) empleados se refieren a la insuficiencia de convergencia y a las disfunciones visuales en general, no existiendo cuestionarios específicos para otras anomalías.

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Introduction

In today's society, in which the emphasis on vision is associated with tasks requiring near vision, the visual system may be unable to perform this type of activity efficiently, leading to visual discomfort, fatigue or asthenopia and impaired visual performance.¹ In many cases, the cause is an abnormality in any of the accommodative and/or vergence systems, which can lead to the development of what are termed accommodative and non-strabismic binocular dysfunctions.² Accommodative and vergence dysfunctions can interfere with a child's academic progress or a person's ability to function efficiently in the course of his or her work. Children may abandon a task due to their inability to maintain adequate accommodation and/or vergence in the plane of fixation.¹ In addition, those who perform extended periods of close vision work, such as reading or the prolonged use of computers, are more likely to report the symptoms and signs associated with these vision disorders.^{3,4} Nevertheless, the symptoms associated with prolonged near vision work can be reduced with the correct treatment to improve accommodative and vergence function.^{4,5}

These dysfunctions are commonly encountered in clinical practice⁶ and present a variety of associated symptoms, including blurred vision, difficulty in focusing at different distances, headache and ocular pain, among others.⁷⁻¹⁰ In general, all of these symptoms are categorised under the generic name of asthenopia. However, the symptoms that the patient perceives may differ depending on the type of causative disorder²; it would therefore be reasonable to

conclude that there are different types of asthenopia.¹¹ In fact, one of the problems that clinicians face when diagnosing these dysfunctions is how to determine which symptoms are associated with each disorder and how to quantify their frequency and severity.¹²

The aim of this study is to determine by means of a scoping review the most common symptoms associated with accommodative and non-strabismic binocular dysfunctions described in the scientific literature published between 1988 and 2012. A further aim is to determine the manner in which subjects' symptoms are obtained in order to quantify their frequency and severity. We elected to study a long period of time in this scoping review so as not to omit any possible relevant information on these anomalies.

Methods and materials

We conducted a scoping review through an exhaustive search in health science databases for research published between 1988 and 2012. The search was performed in January 2013 using the Medline database (via PubMed), CINAHL, PsycINFO and FRANCIS.

We designed two search strategies. The first strategy was based on the use of free-text terms related to accommodative and non-strabismic binocular dysfunctions, searching all database fields. The search equation included boolean operators, truncated symbols and wildcard characters specific to the selected databases. The second search strategy combined the use of controlled MeSH terms and free-text terms related to questionnaires, asthenopia, visual symptoms

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