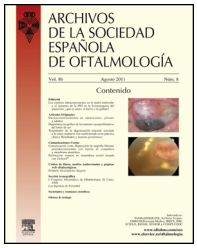
ARCHIVOS DE LA SOCIEDAD ESPAÑOLA DE OFTALMOLOGÍA

www.elsevier.es/oftalmologia



Original article

Relationship between contrast sensitivity test and disease severity in multiple sclerosis patients☆

A. Soler García[a], A. González Gómez[a], L.C. Figueroa-Ortiz[b], A. García-Ben[c], J. García-Campos[a,b,*]

[a] Servicio de Oftalmología, Hospital Virgen de la Victoria de Málaga , Málaga, Spain
[b] Área de Oftalmo-Biología, Centro de Investigaciones Médico-Sanitarias, Universidad de Málaga, Málaga, Spain
[c] Servicio de Oftalmología, Hospital General de Galicia, Santiago de Compostela, Spain

ARTICLE INFO

Article history:
Received 30 October 2013
Accepted 18 March 2014
Available online 26 September 2014

Keywords:
Multiple sclerosis
Optic neuritis
Contrast sensitivity
Expanded disability status scale
Pelli-Robson

ABSTRACT

Objective: To assess the importance of the Pelli-Robson contrast sensitivity test in multiple sclerosis patients according to the Expanded Disability Status Scale (EDSS).

Material and methods: A total of 62 patients with multiple sclerosis were included in a retrospective study. Patients were enrolled from the Neurology Department to Neuroophthalmology at Virgen de la Victoria Hospital. Patients were classified into three groups according to EDSS: group (A) lower than 1.5, group (B) between 1.5 and 3.5 and group (C) greater than 3.5. Visual acuity and monocular and binocular contrast sensitivity were performed with Snellen and Pelli-Robson tests respectively. Twelve disease-free control participants were also recruited. Correlations between parameter changes were analyzed.

Results: The mean duration of the disease was 81.54 ± 35.32 months. Monocular and binocular Pelli-Robson mean values in the control group were 1.82 ± 0.10 and 1.93 ± 0.43 respectively, and 1.61 ± 0.29 and 1.83 ± 0.19 in multiple sclerosis patients. There were statistically significant differences in the monocular analysis for a level of significance $p < 0.05$. Mean monocular and binocular Pelli-Robson values in relation to gravity level were, in group A: 1.66 ± 0.24 and 1.90 ± 0.98, group B: 1.64 ± 0.21 and 1.82 ± 0.16, and group C: 1.47 ± 0.45 and 1.73 ± 0.32 respectively. Group differences were statistically significant in both tests: $p = 0.05$ and $p = 0.027$.

Conclusions: Monocular and binocular contrast discrimination analyzed using the Pelli-Robson test was found to be significantly lower when the severity level, according EDSS, increases in multiple sclerosis patients.

☆ Please cite this article as: Soler García A, González Gómez A, Figueroa-Ortiz LC, García-Ben A, García-Campos J. Relación entre el test de sensibilidad al contraste y el nivel de gravedad en pacientes con esclerosis múltiple. Arch Soc Esp Oftalmol. 2014;89:347–351.

* *Corresponding author.*
E-mail address: jmgarcia@uma.es (J. García-Campos).

Relación entre el test de sensibilidad al contraste y el nivel de gravedad en pacientes con esclerosis múltiple

Palabras clave:
Esclerosis múltiple
Neuritis óptica
Sensibilidad al contraste
Escala expandida del estado de discapacidad
Pelli-Robson

RESUMEN

Objetivo: Evaluar la utilidad de la prueba de sensibilidad al contraste Pelli-Robson en pacientes con esclerosis múltiple, dependiendo de la escala expandida del estado de discapacidad (EDSS).

Material y métodos: Estudio retrospectivo de 62 pacientes diagnosticados de esclerosis múltiple y remitidos desde el Servicio de Neurología a la Unidad de Neurooftalmología del Hospital Virgen de la Victoria. Los pacientes fueron clasificados según la escala EDSS en 3 grupos: A) inferior a 1,5; B) entre 1,5 y 3,5 y C) superior a 3,5. Se determinó la agudeza visual y la sensibilidad al contraste monocular y binocular mediante las pruebas de Snellen y Pelli-Robson, respectivamente. Un total de 12 pacientes libres de enfermedad fueron reclutados como grupo control. Se analizaron estadísticamente los resultados obtenidos.

Resultados: El tiempo medio de evolución de la enfermedad fue de $81{,}54 \pm 35{,}32$ meses. Los valores medios del Pelli-Robson monocular y binocular en el grupo control fueron $1{,}82 \pm 0{,}10$ y $1{,}93 \pm 0{,}43$, mientras que en los pacientes con esclerosis múltiple fueron $1{,}61 \pm 0{,}29$ y $1{,}83 \pm 0{,}19$ respectivamente, siendo estas diferencias estadísticamente significativas en el análisis monocular para un nivel de significación de $p < 0{,}05$. Respecto al nivel de gravedad, los valores medios monoculares y binoculares de la prueba de Pelli-Robson fueron en el grupo A: $1{,}66 \pm 0{,}24$ y $1{,}90 \pm 0{,}98$; en el grupo B: $1{,}64 \pm 0{,}21$ y $1{,}82 \pm 0{,}16$ y en el grupo C: $1{,}47 \pm 0{,}45$ y $1{,}73 \pm 0{,}32$, respectivamente. Las diferencias entre grupos mostraron una significación estadística para ambas pruebas: $p = 0{,}05$ y $p = 0{,}027$.

Conclusiones: La sensibilidad al contraste, monocular y binocular, analizada mediante la prueba de Pelli-Robson disminuye significativamente según aumenta el nivel de gravedad medida con la escala EDSS en pacientes con esclerosis múltiple.

Introduction

Multiple sclerosis is considered to be an inflammatory, chronic and demyelinizing neurological disease of self-immune etiology which can affect any structure of the central nervous system. In 85% of the cases it courses with outbreaks and relatively limited symptomatological distribution.[1] Visual loss is the first symptom in 50% of the patients, while 80% develop some degree of visual compromise during the evolution of the disease. In the Optic Neuritis Treatment Trial,[2] 86% of the patients with optic neuritis exhibited visual acuity above 20/25 10 years from the outbreak. In general, visual recovery began in 2 weeks and completed at 6 months.[3]

The Pelli-Robson test is a contrast sensitivity test that utilizes uniformly sized letters (20/60 of the Snellen optotype). For this reason it could have difficulties to capture selected contrast loss due to the uniform size of the letters as has been described for multiple sclerosis and other neurological diseases.[4,5] On the other hand, various longitudinal and cross studies have demonstrated that this test, together with the Sloan test, facilitates the discrimination of visual and functional alterations between multiple sclerosis patients and disease-free subjects.[6,7]

The present paper has the aim of analyzing the results obtained in visual acuity and monocular and binocular contrast sensitivity test in patients with multiple sclerosis, depending on the severity level of the disease.

Material and methods

The study included 74 patients: 62 diagnosed with multiple sclerosis according to the McDonald criteria (124 eyes)[8] and 12 disease-free (24 eyes) who were taken as control group. In compliance with the Helsinki declaration, all the subjects expressed their consent in writing after receiving an explanation on the characteristics of the study and assurances on the confidentiality of results.

Data taken for all patients comprised age, sex, time in months since diagnosis, the number of outbreaks and time elapsed since the last optic neuritis outbreak. The ophthalmological examination included a visual acuity assessment using Snellen optotypes, intraocular pressure measured with Perkins applanation tonometer and ocular fundus exploration with no-contact biomicroscopy equipped with an 84-diopter Volk lens (Volk, Ohio, USA). Visual acuity was converted to the minimum resolution and logarithm of four statistical analysis.[9] The study excluded patients with ocular hypertension, glaucoma or other ophthalmological or systemic disease which could alter visual acuity. All multiple sclerosis patients