NERVE FIBER LAYER THICKNESS MEASUREMENT USING OPTICAL COHERENCE TOMOGRAPHY (OCT) IN ANISOMETROPIC AMBLYOPIA

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By

Mohammed El-Sayed Gad El-Wakkad
M.B, B.CH

Supervised by

Professor Dr. **OTHMAN ALI ZICO**
Professor of Ophthalmology – Faculty of Medicine
Ain Shams University

Dr. **MAHA MOHAMED IBRAHIM**
Lecturer of Ophthalmology – Faculty of Medicine
Ain Shams University

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مقدمه من

الطبيب / محمد السيد جاد الوقاد

تحت إشراف

أ.د / عثمان على زيكو

أستاذ طب و جراحة العيون – كلية الطب – جامعة عين شمس

د/ مها محمد إبراهيم

مدرس طب و جراحة العيون – كلية الطب – جامعة عين شمس

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Amblyopia is a decrease of vision, either in one eye or both eyes, for which no organic cause can be found by physical examination of the eye. The term functional amblyopia often is used to describe amblyopia, which is potentially reversible by occlusion therapy. Organic amblyopia refers to irreversible.

Myopic anisometropia is less amblyogenic than hypermetropic anisometropia as there is no significant anisometropic amblyopia unless differences between the two eyes are greater than +1.50 D in hyperopes and greater than -3.00 D in myopes.

The study included 18 patients with anisometropic amblyopia, 9 of them have hypermetropic amblyopia & the remaining patients have myopic amblyopia. All of the patients are subjected to full ophthalmological examination & measuring the foveal & parafoveal thickness of the retina of the normal & the amblyopic eye using the OTI/SLO OCT device.

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List of abbreviations

3D = three dimensional.

ARC = Abnormal Retinal Correspondance.

BCVA = Best Corrected Visual Acuity.

CC = Choriocapillaries.

D = Dioptre.

FDA = Food and Drug Administration.

GCL = Ganglion Cell Layer.

HM Ambly = Hypermetropic Amblyopia.

ILM = Internal Limiting Membrane.

INL = Inner Nuclear Layer.

IPL = Inner Plexiform Layer.

M Ambly = Myopic Amblyopia.

NFL = Nerve Fibre Layer.

OCT = Optical Coherence Tomography.

OLM = Outer Limiting Membrane.

ONL = Outer Nuclear Layer.

OPL = Outer Plexiform Layer.

RNFL = Retinal Nerve Fibre Layer.

SD = Standard Deviation.

SD-OCT = Spectral Domain Optical Coherence Tomography.

TD-OCT = Time Domain Optical Coherence Tomography.

Introduction

Amblyopia refers to a decrease of vision, either unilaterally or bilaterally, for which no organic cause can be found by physical examination of the eye. The term functional amblyopia often is used to describe amblyopia, which is potentially reversible by occlusion therapy. Organic amblyopia refers to irreversible amblyopia ***(Kushner et al, 1998).***

Most vision loss from amblyopia is preventable or reversible with the right kind of intervention. It is important to rule out any organic cause of decreased vision because many diseases may not be detectable on routine examination. Three critical periods of human visual acuity development have been determined ***(Kirschen et al, 1999).***

During these time periods, vision can be affected by various mechanisms to cause amblyopia. These periods are as follows:

- The development of visual acuity from the 20/200 range to 20/20, which occurs from birth to age 3-5 years.
- The period of the highest risk of deprivation amblyopia, from a few months to 7 or 8 years of age.
- The period during which recovery from amblyopia can be obtained, from the time of deprivation up to the teenage years or even sometimes the adult years ***(von Noorden et al, 1996).***