



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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التوثيق الإلكتروني والميكرو فيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكرو فيلم



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التوثيق الإلكتروني والميكروفيلم

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Optical Coherence Tomography and Optical Coherence Tomography Angiography Findings in Amblyopic Patients

Thesis

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List of Abbreviations

Abb.	Full term
BBV	Balanced binocular viewing
BCVA.....	Best corrected visual acuity
CCD	Charge-coupled device
cpRNFL	Circumpapillary retinal nerve fiber layer
CT	Choroidal thickness
DCP	Deep capillary plexus
DE.....	Dominant eye
EDI	Enhanced depth imaging
ELM.....	External limiting membrane
FAZ.....	Foveal avascular zone
FD-OCT	Fourier domain optical coherence tomography
FFA.....	Fundus fluorescein angiography
FMT.....	Foveal minimum thickness
GCL	Ganglion cell complex
GCL	Ganglion cell layer
I-BiT	Interactive binocular treatment
ICGA.....	Indocyanine green angiography
ILM.....	Internal limiting membrane
INL	Inner nuclear layer
IPL.....	Inner plexiform layer
Mrnfl.....	Macular retinal nerve fiber layer
NDE.....	Non-dominant eye
OCT	Optical coherence tomography
OCTA.....	Optical coherence tomography angiography
ONH	Optic nerve head
ONL	Outer nuclear layer

List of Abbreviations Cont...

Abb.	Full term
OPL.....	Outer plexiform layer
RNFL.....	Retinal nerve fiber layer
SCP	Superficial capillary plexus
SD-OCT	Spectral domain Optical coherence tomography
SS-OCT.....	Swept-source optical coherence tomography
TD-OCT	Time domain optical coherence tomography
VD.....	Vascular density

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INTRODUCTION

Amblyopia is the most common vision deficit in children, affecting 2–5% of children in the UK and the second most common cause of functional low vision in children in low-income countries. Unilateral amblyopia is a developmental defect of vision, and has two main causes: (i) a difference in the optical properties of the two eyes, reflected in a different spectacle prescription for the right and the left eye (anisometropia) and (ii) strabismus (misalignment of the visual axes). Some children have both anisometropic and strabismic amblyopia ('combined' or 'mixed mechanism' amblyopia) (*Taylor et al., 2016*).

A study was made by *Rashad et al., 2018* to measure the prevalence of amblyopia among primary school children in central Cairo which was 1.49% another study was made in Minia University showed same prevalence of amblyopia (*Abdelrazik and Khalil, 2014*).

Rarely, congenital or early childhood obstruction of the visual axis, for example by lid ptosis or by opacities of the cornea, crystalline lens or vitreous, can give rise to amblyopia by deprivation, as the retina does not receive a clear image (*Taylor et al., 2016*).

Although it has been reported that amblyopia primarily causes cerebral anatomical alterations in lateral geniculate

bodies and the visual cortex, it can also affect retinal layers and vascular structures (*Karabulut et al., 2019*).

The pathophysiology of amblyopia has not been fully defined. Neuroanatomy and neurophysiology studies have equated the hypothesis that retinal functional changes are involved in the development of amblyopia (*Sobral et al., 2018*). However, the nature of the retina's involvement remains unclear (*Bruce et al., 2013*).

A large number of studies have been recently performed to assess the structural variations in retinal nerve fiber layer (RNFL) in eyes with amblyopia. Contrary to the general belief that the amblyopic eyes are structurally normal, significant alterations have been found in the RNFL, ganglion cell complex and foveal thickness in patients with amblyopia. However, a consensus on retinal abnormalities has not been reached (*Bitirgen et al., 2019*).

Another region under investigation in amblyopic eyes is the choroid. *Spaide et al., 2008* defined enhanced depth imaging (EDI) method using conventional spectral-domain optical coherence tomography (SD-OCT). This new procedure enables measurement of the choroidal thickness (CT) at different locations within the macular and peripapillary regions. Recent studies have reported an increase in macular CT in amblyopic eyes (*Bitirgen et al., 2019*).