بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Optical Coherence Tomography Angiography In Early Detection Of Microvascular Changes In Type I Diabetic Children

A Systematic Review and Meta-analysis

Submitted for partial fulfillment of Degree in Ophthalmology

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عن

استخدام التصوير البصرى المقطعى التماسكى للاوعية الدموية في الكشف المبكرعن التغيرات في الاوعية الدموية الدقيقة لدى الاطفال المصابين بداء السكري

توطئة للحصول علي درجة الماجستيرفى طب وجراحة العيون

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List of Abbreviations

Abb.	Full term
"T2DM"	Type 2 diabetes mellitus
2D	Two-dimensional
3-D	Three-dimensional
ADA	American Diabetes Association
Ang	Angiopoietin
BDR	Background diabetic retinopathy
CENTRAL	Cochrane Central Register of Controlled Trials
CI	Confidence interval
CSII	Continuous subcutaneous insulin infusion
CVD	Cardiovascular disease
CWS	Cotton-wool spots
DCCT	Diabetes Control and Complications Trial
DCP	Deep capillary plexus
DKA	Diabetic ketoacidosis
DM	Diabetes mellitus
DME	Diabetic macular edema
DN	Diabetic nephropathy
DOCT	Doppler OCT
DR	Diabetic Retinopathy
ER	Endoplasmic Reticulum
ESRD	End stage renal disease
ETDRS	Early Treatment of Diabetic Retinopathy Study
FA	Fluorescein angiography
FAZ	Foveal avascular zone
FD-OCT	Fourier-domain OCT .
FFA	Fluorescein fundus angiography
FF-OCT	Full-field OCT
GCK	Glucokinase
GCL	Ganglion cell layer
GDM	Gestational diabetes mellitus
HbA1c	Glycated haemoglobin A1c
HDL	High-density lipoprotein
HE	Hard exudates

Abb.	Full term
HLA	Human leukocyte antigen
HMA	Hemorrhages and microaneurysms
HNF	Hepatic nuclear factor
ICDR	International Clinical Disease Severity Scale for DR
ICGA	Indocyanine green angiography
IDDM	Insulin-dependent diabetes mellitus
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance
IL	Interleukin
INL	And the border
IPL	Inner plexiform layer
IRMA	Intraretinal microvascular abnormalities
IS	Photoreceptor inner segment
ISPAD	International Society for Pediatric and Adolescent Diabetes
LDL	Low-density lipoprotein
MA	Microaneurysm
MA	Microaneurysms
MCP	Monocyte Chemoattractant Protein
MD	Mean deviation
MODY	Maturity-onset diabetes of the young
NGSP	National Glycohemoglobin Standardization Program
NMC	Nonmydriatic cameras
NO	Nitric oxide
NV	Neovascularization
NVD	New vessels on the disc
NVE	New vessels elsewhere.
OCT	Optical Coherence Tomography
OCTA	Optical coherence tomography angiography
OGTT	Oral glucose tolerance test
OPL	Outer plexiform layer
P	P- value
PDR	Proliferative diabetic retinopathy
PN	Peripheral neuropathy
PRISMA	The Preferred Reporting Items for Systematic reviews And Meta-Analyses

Abb.	Full term
R0	No retinopathy
RNFL	Retinal nerve fiber layer
RPE	Retinal pigment epithelium
RPE	Highly reflective
SCP	Superficial capillary plexus
SD	Spectral domain
SD	Standard deviation
SD-OCT	Spectral-domain OCT
SSADA	Split-spectrum amplitude decorrelation angiography
SS-OCT	Swept-source OCT
T1DM	Type 1 diabetes
TD-OCT	Time-domain OCT
TNF	Tumor Necrosis Factor
VCSEL	Vertical cavity surface emitting laser
VD	Vessel densities
VNTR	Variable number of tandem repeats
VTDR	Vision-threatening DR
WHO	World Health Organization

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INTRODUCTION

Diabetes mellitus (DM) is the third most common chronic disease in children. Although pediatric populations appear to be at minimal risk for Diabetic Retinopathy (DR), some adolescents develop clinically significant macular edema or even proliferative retinopathy ***(Geloneck et al., 2015).***

Diabetic retinopathy (DR) is one of the serious complications of diabetes mellitus (DM), and it is a major cause of sight-loss worldwide ***(Wong et al., 2016).***

Pubertal status and the prepubertal duration of diabetes influence the risk of developing DR, as children under the age of 10 years have minimal risk, and no cases of proliferative DR in the first decade of life were noted ***(Cho, Craig and Donaghue, 2014).***

Therefore, early detection of DR through screening programs is crucial for preserving vision in patients with diabetes ***(Lueder and Silverstein, 2005).***

The American Diabetes Association recommends annual screening for retinopathy 5 years after the onset of diabetes. Screening is generally not recommended before the onset of puberty. These recommendations are for adults with type 1 diabetes. An earlier referral of 3 to 5 years after diagnosis is recommended if the patient is 9 years of age ***(Silverstein et al., 2005).***