

Medical Retina

Focus on Retinal Imaging

Bearbeitet von
Frank G Holz, Richard F. Spaide

1. Auflage 2010. Buch. XVI, 227 S. Hardcover
ISBN 978 3 540 85539 2
Format (B x L): 19,3 x 26 cm
Gewicht: 695 g

[Weitere Fachgebiete > Medizin > Sonstige Medizinische Fachgebiete > Radiologie, Bildgebende Verfahren](#)

Zu [Leseprobe](#)

schnell und portofrei erhältlich bei

The logo for beck-shop.de features the text 'beck-shop.de' in a bold, red, sans-serif font. Above the 'i' in 'shop' are three red dots of increasing size. Below the main text, 'DIE FACHBUCHHANDLUNG' is written in a smaller, red, all-caps, sans-serif font.

beck-shop.de
DIE FACHBUCHHANDLUNG

Die Online-Fachbuchhandlung beck-shop.de ist spezialisiert auf Fachbücher, insbesondere Recht, Steuern und Wirtschaft. Im Sortiment finden Sie alle Medien (Bücher, Zeitschriften, CDs, eBooks, etc.) aller Verlage. Ergänzt wird das Programm durch Services wie Neuerscheinungsdienst oder Zusammenstellungen von Büchern zu Sonderpreisen. Der Shop führt mehr als 8 Millionen Produkte.

Contents

Chapter 1 Common Pitfalls in the Use of Optical Coherence Tomography for Macular Diseases

Lihteh Wu and Teodoro Evans

1.1	Introduction	1
1.2	Limitations of Time-Domain OCT	2
1.2.1	Acquisition Errors in the Stratus® OCT...	2
1.2.2	Interpretation Errors with the Stratus® OCT	3
1.3	Advantages and Limitations of Spectral-Domain OCT.....	8
1.4	Conclusion.....	9
	References.....	9

Chapter 2 Simultaneous SD-OCT and Confocal SLO-Imaging

Peter Charbel Issa, Monika Fleckenstein,
Hans-Martin Helb, Hendrik P. N. Scholl, Steffen
Schmitz-Valckenberg, and Frank G. Holz

2.1	Background.....	11
2.2	Principle of the Combined Imaging Technology	11
2.3	Clinical Application.....	12
2.4	Conclusions.....	16
	References.....	18

Chapter 3 Fluorescein Angiography

Howard F. Fine, Jonathan L. Prenner, and Daniel Roth

3.1	Principles of Fluorescein Angiography.....	19
3.2	Procedures for Fluorescein Angiography.....	19
3.3	Relevant Anatomy in Fluorescein Angiography.....	20
3.4	Time Course of Fluorescein Angiography.....	21
3.5	Interpretation of Fluorescein Angiography.....	22

3.5.1	Hypofluorescent Lesions	22
3.5.2	Hyperfluorescent Lesions.....	22
3.6	Fluorescein Angiography Today.....	24
	References	25

Chapter 4 Wide-Field Imaging and Angiography

Thomas Friberg and Leanne Labriola

4.1	Introduction	27
4.2	History of Fundus Imaging	28
4.3	Wide-Field Images with a Scanning Laser Ophthalmoscope	28
4.3.1	Fluorescein Angiography with a Scanning Laser Ophthalmoscope	29
4.3.2	Advantages of Imaging with a Scanning Laser Ophthalmoscope	29
4.3.3	Disadvantages of Imaging with a Scanning Laser Ophthalmoscope	30
4.4	Clinical Use of Wide-Field Imaging	31
4.4.1	Wide-Field Imaging in Uveitis.....	31
4.4.2	Wide-Field Imaging in Proliferative Retinopathies	33
4.4.3	Wide-Field Imaging of Peripheral Retinal Lesions	36
4.4.4	Wide-Field Imaging of Choroidal Tumors.....	37
4.5	Future Directions for Fundus Imaging...	39
4.6	Conclusion.....	39
	References	39

Chapter 5 Autofluorescence Imaging

Steffen Schmitz-Valckenberg, Monika Fleckenstein,
Richard Spaide, and Frank G. Holz

5.1	Introduction	41
5.2	What is Fundus Autofluorescence?.....	42
5.3	Identification of Early Disease Stages....	42
5.4	Phenotyping.....	42
5.5	Disease Markers.....	43

5.6	Monitoring of Disease Progression.....	44
5.7	Disease Mapping.....	45
5.8	Functional Correlation.....	46
5.9	Future Applications for Therapeutic Interventions	46
	References	48

Chapter 6 Imaging the Macular Pigment

Tos T. J. M. Berendschot

6.1	Macular Pigment.....	51
6.1.1	Characteristics and Potential Functions	51
6.1.2	Macular Pigment and Age-Related Macular Degeneration.....	52
6.1.3	Spatial Distribution.....	52
6.1.4	Modifying the Macular Pigment	54
6.1.5	MPOD and Age.....	54
6.2	Measurement Techniques	55
6.2.1	Heterochromatic Flickerphotometry	55
6.2.2	Fundus reflectance	56
6.2.3	Autofluorescence	57
6.2.4	Raman spectroscopy	58
6.2.5	How do different techniques compare.....	58
6.3	Imaging	58
6.3.1	Heterochromatic Flickerphotometry	58
6.3.2	Fundus Reflectance	59
6.3.3	Autofluorescence	59
6.3.4	Raman spectroscopy	60
	References	61

Chapter 7 Near-Infrared Autofluorescence Imaging

Claudia N. Keilhauer and François C. Delori

7.1	Introduction	69
7.2	Origin of Near-Infrared Autofluorescence	69
7.3	RPE Melanin: Role and Aging	71
7.4	Clinical Cases	72
7.4.1	Age-Related Macular Degeneration.....	72
7.4.2	Retinal Dystrophies	73
7.4.2.1	Stargardt's Disease	73
7.4.2.2	Best's Disease	73
7.4.2.3	Retinitis Pigmentosa	74
7.5	Conclusion.....	75
	References	75

Chapter 8 Near-Infrared Subretinal Imaging in Choroidal Neovascularization

Thomas Theelen, Carel B. Hoyng, and B. Jeroen Klevering

8.1	Introduction	77
8.1.1	Histological Characteristics of Choroidal Neovascularization	77
8.1.2	Current Imaging Modalities for Choroidal Neovascularization	78
8.2	The Basic Principles of Near-Infrared Reflectance Imaging of the Retina	78
8.2.1	Near-Infrared Reflectance Image Acquisition.....	79
8.2.2	Near-Infrared Imaging of the Normal Retina	79
8.3	Clinical Practice of Near-Infrared Subretinal Imaging.....	80
8.3.1	Exudative Age-Related Macular Degeneration	81
8.3.1.1	Classic Choroidal Neovascularization....	81
8.3.1.2	Occult Choroidal Neovascularization....	81
8.3.1.3	Vascularized Detachment of the Retinal Pigment Epithelium	82
8.3.1.4	Mixed-Type Choroidal Neovascularization.....	83
8.3.1.5	Retinal Angiomatous Proliferation	83
8.3.2	Idiopathic Polypoidal Choroidal Vasculopathy	88
8.3.3	Fibrovascular Scar.....	88
8.3.4	Choroidal Neovascularization Not Associated with AMD	88
8.4	Evaluating Therapeutic Effects with Near-Infrared Reflectance Imaging.....	88
8.5	Conclusions.....	91
	References	91

Chapter 9 RetCam™ Imaging of Pediatric Intraocular Tumors

Carol L. Shields, Aparna Ramasubramanian, Sarah Harmon, and Sara Lally

9.1	Fundus Cameras	95
9.1.1	Standard Images	96
9.1.2	Wide-Angle Images	96
9.1.2.1	Pomerantzeff Equator Plus	96
9.1.2.2	RetCam™	96
9.1.2.3	Panoret™	98

9.1.2.4	Optos™	99
9.2	RetCam™ Imaging for Specific Pediatric Intraocular Tumors	100
9.2.1	Retinal Tumors	100
9.2.1.1	Retinoblastoma	100
9.2.1.2	Astrocytic Hamartoma	101
9.2.1.3	Retinal Capillary Hemangioma (hemangioblastoma)	101
9.2.1.4	Retinal Cavernous Hemangioma	102
9.2.1.5	Retinal Racemose Hemangioma	102
9.2.1.6	Vasoproliferative Tumor	102
9.2.2	Retinal Pigment Epithelium Tumors	102
9.2.2.1	Congenital Hypertrophy of the Retinal Pigment Epithelium	102
9.2.2.2	Congenital Simple Hamartoma of the Retinal Pigment Epithelium	102
9.2.2.3	Combined Hamartoma of the Retinal Pigment Epithelium	102
9.2.3	Choroidal Tumors	103
9.2.3.1	Choroidal Nevus	103
9.2.3.2	Choroidal Melanoma	103
9.2.4	Anterior Segment Lesions	104
9.2.4.1	Iris Lesions	104
	References	105

Chapter 10 Metabolic Mapping

Dietrich Schweitzer

10.1	Aspects of Metabolism	107
10.2	Limiting Conditions for Discrimination of Fluorophores at the Ocular Fundus	109
10.3	Excitation and Emission Spectra as well as Fluorescence Lifetimes of Expected Endogenous Fluorophores and Ocular Tissue	109
10.4	Fluorescence Lifetime Mapping Ophthalmoscopy	112
10.4.1	Technical Solution	112
10.4.2	Calculation of Parameters of Time-Resolved Fluorescence	113
10.5	Clinical Results	114
10.5.1	Age-Related Macular Degeneration (AMD)	114
10.5.1.1	Detection of Alterations in Early AMD	114
10.5.1.2	Lifetime Images in Late AMD	115

10.5.2	Metabolic Changes in Retinal Vessel Occlusion	116
10.5.2.1	Arterial Branch Occlusion	116
10.5.2.2	Images of Lifetime Amplitudes in Central Arterial Occlusion	119
10.5.3	Metabolic Alteration in Diabetes mellitus	120
10.5.3.1	Detection of Fields of Reduced Metabolism	120
10.5.3.2	Lifetime Images in Diabetes After Laser Coagulation	121
	References	122

Chapter 11 Assessing Diabetic Macular Edema with Optical Coherence Tomography

Sebastian Wolf

11.1	Diabetic Macular Edema	125
11.2	Examinations in Diabetic Macular Edema	125
11.3	Treatment of Diabetic Macular Edema	125
11.4	High-Resolution Optical Coherence Tomography in Diabetic Macular Edema	126
11.5	Prognostic Features in High-Resolution OCT Scans	128
	References	128

Chapter 12 OCT vs. Photography or Biomicroscopy for Diagnosis of Diabetic Macular Edema

Gianni Virgili, Francesca Menchini, and Mariacristina Parravano

12.1	Introduction: Diabetic Macular Edema, Fundus Photography, and Optical Coherence Tomography	131
12.1.1	Incidence and Natural History	131
12.1.2	Classification: Early Treatment Diabetic Retinopathy Study Grading	132
12.1.3	Optical Coherence Tomography and Diabetic Macular Edema	132
12.2	Investigation of Diagnostic Accuracy of OCT for Detection of DME	133

12.2.1	Potential Aims of OCT Testing in Clinical Practice: Diagnostic Accuracy vs. Others	133	13.6	Macular Hole Formation	146
12.2.2	Diagnostic Accuracy of OCT for Detection of DME: Are Photography or Biomicroscopy a Valid Gold Standard?	133	13.7	Postoperative Appearance	147
12.2.3	Diagnostic Accuracy of OCT to Detect CSME Using Time-Domain OCTs: How to Use OCT Retinal Thickness Cut-Offs?	134	13.8	A Possible Theory of Macular Hole Closure After Vitrectomy	149
12.2.4	Do We Expect Any Differences in Retinal Thickness Thresholds Adopted to Define CSME Using Spectral-Domain Compared with Time-Domain OCTs?	135	13.9	Surgical Considerations	150
12.3	Use of OCT When Compared with Photography: Beyond Diagnostic Accuracy	135	13.10	Lamellar Macular Hole and Macular Pseudohole	150
12.3.1	Establishing a Baseline Measure to Monitor Response in People who Are Treated for CSME Rather than Simply Assessing its Presence or Absence	135	13.11	Clinical Features	152
12.3.2	Potential Validity of OCT for Monitoring Treatment Response	135	13.11.1	Examination of Lamellar Macular Holes and Pseudoholes	152
12.3.3	Candidate Predictors of Visual Outcome Using OCT in Patients with DME	136	13.12	Treatment	153
12.4	Appendix: Reproducibility of OCT Retinal-Thickness Measurement in Patients with DME	137		References	154
12.4.1	How Reproducibility is Reported	137			
12.4.2	Stratus OCT Reproducibility in Patients with DME	137			
12.4.3	Spectral-Domain OCTs Reproducibility	137			
	References	138			

Chapter 13 Spectral Domain Optical Coherence Tomography for Macular Holes

Jerzy Nawrocki and Zofia Michalewska

13.1	Stages of Full Thickness Macular Hole in Spectral OCT (SOCT)	141
13.2	Clinical Features	142
13.3	Examination	142
13.4	Natural History	142
13.5	Ultra-High Resolution OCT and Spectral OCT Findings in Macular Holes	143

Chapter 14 Combined Spectral-Domain Optical Coherence Tomography/Scanning Laser Ophthalmoscopy Imaging of Vitreous and the Vitreo-Retinal Interface

Jerry Sebag and Michelle Y. Wang

14.1	Introduction	157
14.2	Vitreous Biochemistry	158
14.3	Vitreo-Retinal Interface Anatomy	158
14.3.1	Age-Related Changes	159
14.4	Anomalous Posterior Vitreous Detachment (PVD)	159
14.5	Spectral-Domain OCT (SD-OCT)	160
14.5.1	SD-OCT/SLO	161
14.6	Vitreo-Maculopathies	161
14.6.1	Macular Pucker (MP)	161
14.6.2	Macular Hole (MH)	162
14.6.2.1	Lamellar Hole (LH)	164
14.6.3	Age-Related Macular Degeneration (AMD)	164
14.6.4	Vitreo-Macular Traction Syndrome (VMTS)	166
14.7	Conclusion	167
	References	167

Chapter 15 Choroidal Imaging with Optical Coherence Tomography

Richard Spaide

15.1	Enhanced Depth Imaging Optical Coherence Tomography	169
15.2	Mechanism of Enhanced Depth Imaging	170
15.3	Imaging the Choroid	171
15.4	Age-Related Choroidal Atrophy	175
15.5	Choroid in High Myopia	178

15.6	Pigment Epithelial Detachment in Age-Related Macular Degeneration	182
15.7	Additional Diseases such as Choroidal Tumors and Glaucoma.....	183
15.8	Volume Rendering	183
15.9	Summary	185
	References	188

Chapter 16

Spectral-Domain Optical Coherence Tomography in Central Serous Chorioretinopathy

Sandeep Saxena, Carsten H. Meyer,
Hans-Martin Helb, and Frank G. Holz

16.1	Introduction	191
16.2	Optical Coherence Tomography	192
16.3	Role of Optical Coherence Tomography	192
16.4	Spectral-Domain Optical Coherence Tomography	192
	References	199

Chapter 17

New Developments in Optical Coherence Tomography Technology

Wolfgang Drexler, Rainer Leitgeb,
and Christoph K. Hitzenberger

17.1	Background and Motivation	201
17.2	Three-Dimensional Imaging of the Choroid	202
17.3	In Vivo Cellular Resolution Retinal Imaging	205
17.4	Polarization Sensitive Retinal OCT	207
17.5	Doppler (Blood Flow) Retinal OCT	209
	References	213

Chapter 18

Toward Molecular Imaging

Steffen Schmitz-Valckenberg, M. Francesca
Cordeiro, Fred W. Fitzke, and Frank G. Holz

	References	221
--	------------------	-----

Index	223
--------------------	-----