46. Swept-source 光干渉断層計を用いた

脈絡膜透過性亢進所見の観察

小畑　亮、野村陽子、譚　雪、東　惠子、井上達也、柳　靖雄
（東京大）

研究要旨　インドシアニングリーン蛍光眼底造影検査(ICGA)における脈絡膜透過性亢進所見は、加齢黄斑変性における血管内皮成長因子（VEGF）阻害薬療法における反応不良因子である可能性が報告されている。今回、脈絡膜への測定光侵達性が良好である swept-source 光干渉断層計(OCT)による観察を行い、OCT 上の所見とICGA における脈絡膜透過性亢進所見との関連について検討した。東京大学を受診した中心性漿液性脈絡網膜症(CSC)症例 27 例 28 眼（39-78 歳）において、インドシアニングリーン蛍光眼底造影検査(ICGA)および swept-source OCT（Topcon）により中心窩を中心とした 12 方向のラジアルスキャンを行った。OCT 検査での漿液性網膜剥離(SRD)、中心窩脈絡膜厚、および脈絡膜層における高反射／低反射領域比（L/D 比）を評価し、透過性亢進所見との関連について後ろ向き検討を行った。対象症例中、光線力学療法(PDT)15 眼、光凝固 3 眼の治療歴を認めた。ICGA において脈絡膜透過性亢進所見は 26 眼(93%)に認められた。うち 15 眼に脈絡膜外層の低反射領域が連続して内層が不鮮明化となる所見（不鮮明化）を認めた。15 眼中 14 眼において不鮮明化所見は透過性亢進領域内に認められた。不鮮明化所見を有する例は認めない例に比して、PDT 治療歴の有る頻度が有意に低く(33％対 67％、p=0.008)、測定時に SRD を認める例が有意に高く(69％対 17%、p=0.008)、中心窩脈絡膜厚が有意に厚く(p=0.03)。またL/D 比が低かった(p=0.03)。ICGA における脈絡膜透過性亢進所見を有するCSC 症例において、swept-source OCT 観察で内層不鮮明化所見を呈する症例を認める。本所見は脈絡膜内の滲出性変化と関連する可能性が示唆される。

A. 研究目的

インドシアニングリーン蛍光眼底検査(ICGA)により認められる脈絡膜透過性亢進所見は、加齢黄斑変性（AMD）眼の一部の症例に認められ、[1] 血管内皮成長因子（VEGF）阻害薬の治療効果にも関連すると報告されている。[2] 近年光干渉断層計（OCT）を用いて、脈絡膜が観察されるようになり、透過性亢進領域を有する眼は脈絡膜厚が大きいなどの報告がなされている。[3] しかし、脈絡膜内部所見との関連を検討した報告は乏しい。

Swept-source OCT (SSOCT)は波長掃引式の光源を用いた OCT であり、現有機器は約 1μm 前後の波長を使用している。現在普及している spectral-domain OCT に比して眼球組織深達度が高く、また深さによる感度の減衰が無いため、脈絡膜および強膜の観察に有用であると報告されている。[4,5]

今回我々は SSOCT を用いた観察で得られた所見と脈絡膜透過性亢進との関連について検討した。

B. 研究方法

研究デザインは後ろ向き症例検討である。対象は東京大学附属病院眼科黄斑外来受診患者のうち、中心性漿液性脈絡網膜症(CSC)患者 27 例 28 眼に対して、診療録および検査データを参照した。

検査項目については、年齢、治療歴、インドシアニングリーン蛍光眼底造影検査および swept-source OCT による中心窩を中心としたスキャンを行った。

インドシアニングリーン蛍光眼底検査は、HRAII (Heidelberg Engineering、Germany) を用いて行った。造影後期における透過性亢進所見を評価した。

Swept-source OCT 検査は、DRI OCT-1 (Topcon, Tokyo, Japan)を用いた。本装置は波長 1050nm を中心とした波長掃引光源を用いて出力し、その反射光を検出してフーリエ変換処理を行う。深さ分解能は 8μm、横方向分解能は 20μm である。100,000Hz の A-scan を行う。中心窩を中心とした 12 本の 9mm ラジアルスキャンを施行した。各スキャンは最大 32 スキャン画像を平均化した。中心窩脈絡膜厚は、中心窩におけるブルッフ膜相当高反射層と、脈絡膜強膜境界に相当する高反射層との距離を内蔵のキャリパーを用い手動で測定した。

OCT 画像の脈絡膜層を定性的に解析した。すなわち Haller 層に相当する脈絡膜外層の管腔様低反射領域を同定し、その低反射領域が脈絡膜内層まで拡大して、Sattler 層および脈絡毛細血管板層に相当する顆粒状の高反射領域がブルッフ膜層直外層まで不鮮明化している所見を「不鮮明化所見」と定義した。各眼における 12 スキャンのうち、一つでも本所見を認める場合は所見ありとした。

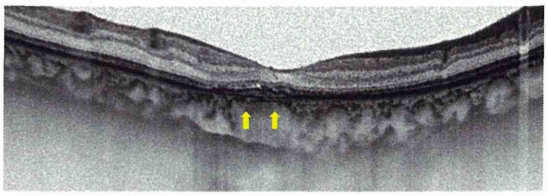

図 1:脈絡膜内層不鮮明化所見

L/D 比の計算

脈絡膜実質と管腔の比率を推定する指標となる light-to -dark (L/D)比を既報[6]の方法を一部修正して行った。9mm 水平スキャン画像において、中心窩を中心とした左右 1mm の範囲における、ブルッフ膜から脈絡膜強膜境界面までの画像を抽出し、信号強度のしきい値を大津の 2 値化により求めた。しきい値より高信号の領域(light)および低信号の領域(dark)

(倫理面への配慮)

倫理面では個人情報の漏洩がないよう留意した。

C. 研究結果

対象症例の背景因子は図2のとおりであった。光線力学療法(PDT)15 眼、光凝固 3 眼の治療歴を認めた。

背景因子

総眼数	28
平均年齢[範囲]	59.6[39-78]
男性(%)	21/28(75)
治療歴	
光線力学療法	15/28
最終治療後期間(月[範囲])	9.2[2-36]
光凝固	3/28
最終治療後期間(月[範囲])	2.6[0.2-6]
なし	10/28
脈絡膜透過性亢進所見あり(%)	26/28(93)

図2:背景因子

ICGA において脈絡膜透過性亢進所見は 26

眼(93%)に認められた。うち 15 眼に OCT 画像の脈絡膜内層不鮮明化所見を認めた。15 眼中 14 眼において不鮮明化所見は透過性亢進領域内に認められた。不鮮明化所見を有する例は認めない例に比して、PDT 治療歴の有る頻度が有意に低く(33%対 67%、p=0.008)、測定時に SRD を認める例が有意に高く(69%対 17%、p=0.008)、中心窩脈絡膜厚が有意に厚く(p=0.03)。またL/D 比が低かった(p=0.03)。(図3)

図3:結果

結果変数を SRD の有無、説明変数を不鮮明化所見および中心窩脈絡膜厚としたロジスティック回帰分析では、不鮮明化所見のみ有意な相関を呈した。

D. 考察

脈絡膜透過性亢進所見はCSCによく認められる所見として知られ、[7,8,9] 脈絡膜厚増大と関連しており、[10,11] 脈絡膜循環うっ滞を示唆する所見と考えられている。[12] 近年では AMD 特に PCV にも認められ、抗 VEGF 薬の応答不良との関連が示唆されている。[2,13]

OCT を用いた脈絡膜内部所見の検討は最近になりいくつかの報告がなされている。脈絡膜外層管腔構造の拡大が CSC[14] および AMD[15] で認められるとされ、一方で脈絡膜内層厚の減少も CSC で認められるとされる。[16] しかし、現時点で、管腔内領域を含むと考えられる OCT 低反射領域と、実際の血管内領域との対応は不詳であるため、本検討では内装不鮮明化所見と称し検討した。さらに脈絡膜内層構造が外層から拡大した低反射像によりほぼ同定し得ない状況を所見ありと定義した。その結果、本所見の有無は SRD の有無によく相関し、脈絡膜厚よりも関連を認めていた。これより本書権は脈絡膜循環うっ滞の程度を鋭敏に反映する所見と考えられる。

本研究の AMD への応用としては、今後、AMD 癌に対して、脈絡膜厚に加えて本書権について検討することで、脈絡膜循環売ったいと、AMD の類型化または治療効果との関連についてより詳細な評価が可能となると考えられる。

E. 結論

ICGA における脈絡膜透過性亢進所見を有する CSC 症例において、swept-source OCT 観察で内層不鮮明化所見を呈する症例を認める。本所見は脈絡膜内の滲出性変化と関連する可能性が示唆される。

I. 参考文献

1. Sasahara M, Tsujikawa A, Musashi K, et al: Polypoidal choroidal vasculopathy with choroidal vascular hyperpermeability. Am J Ophthalmol 142, 601-607, 2006.

2. Koizumi H, Yamagishi T, Yamazaki T, Kinoshita S: Relationship between clinical characteristics of polypoidal choroidal vasculopathy and choroidal vascular hyperpermeability. Am J Ophthalmol 155, 305-313, 2013.

3. Jirarattanasopa P, Ooto S, Nakata I, et al: Choroidal thickness, vascular

hyperpermeability, and complement factor H in age-related macular degeneration and polypoidal choroidal vasculopathy. IOVS 53, 3663-3672, 2012.

4. Yasuno Y, Miura M, Kawana K, et al: Visualization of sub-retinal pigment epithelium morphologies of exudative macular diseases by high-penetration optical coherence tomography. IOVS 50, 405-413, 2009.

5. Hirata M, Tsujikawa A, Matsumoto A, et al: Macular Choroidal Thickness and Volume in Normal Subjects Measured by Swept-Source Optical Coherence Tomography. IOVS 52, 4971-4978, 2011.

6. Branchini LA, Adhi M, Regatieri CV, et al: Analysis of choroidal morphologic features and vasculature in healthy eyes using spectral-domain optical coherence tomography. Ophthalmology. published ahead of print. doi: 10.1016/j.ophtha.2013.01.066

7. Guyer DR, Yannuzzi LA, Slakter JS, et al: DIgital indocyanine green videoangiography of central serous chorioretinopathy. Arch Ophthalmol 112, 1057-1062, 1994.

8. Piccolino FC, Borgia L: Central serous chorioretinopathy and indocyanine green angiography. Retina 14, 231-242, 1994.

9. Iida T, Kishi S, Hagimura N, Shimizu K: Persistent and bilateral choroidal vascular abnormalities in central serous chorioretinopathy. Retina 19, 508-512, 1999.

10. Maruko I, Iida T, Sugano Y, et al: Subfoveal choroidal thickness after treatment of central serous chorioretinopathy. Ophthalmology 117, 1792-1799, 2010.

11. Jirarattanasopa P, Ooto S, Tsujikawa A, et al: Assessment of macular choroidal thickness by optical coherence tomography and angiographic changes in central serous chorioretinopathy. Ophthalmology 119, 1666-1678, 2012.

12. Prünte C, Flammer J: Choroidal capillary and venous congestion in central serous chorioretinopathy. Am J Ophthalmol 121, 26-34, 1996.

13. Cho HJ, Kim HS, Jang YS, et al: Effects of choroidal vascular hyperpermeability on anti-vascular endothelial growth factor treatment for polypoidal choroidal vasculopathy. American J Ophthalmol 156, 1192-1200, 2013.

14. Ferrara D, Mohler KJ, Waheed N, et al: En face enhanced-depth swept-source optical coherence tomography features of chronic central serous chorioretinopathy. Ophthalmology. Published ahead of print.

15. Sohrab M, Wu K, Fawzi AA. A Pilot Study of Morphometric Analysis of Choroidal Vasculature In Vivo, Using En Face Optical Coherence Tomography. PLoS ONE 7, e48631, 2012.

16. Yang L, Jonas JB, Wei W: Optical coherence tomography-assisted enhanced depth imaging of central serous chorioretinopathy. Invest Ophthalmol Vis Sci 54, 4659-4665, 2013.

Ⅳ. 関 連 業 績 一 覧

1. Sato R, Yasukawa T, Kacza J, Eichler W, Nishiwaki A, Iandiev I, Ohbayashi M, Kato A, Yafai Y, Bringmann A, Takase A, Ogura Y, Seeger J, Wiedemann P: Three-dimensional spheroidal culture visualization of membranogenesis of Bruch's membrane and basolateral functions of the retinal pigment epithelium. Invest Ophthalmol Vis Sci 54, 1740-1749, 2013.

2. 安川 力: 加齢黄斑変性に対する抗 VEGF 治療の現状と展望. シンポジウム:抗 VEGF 治療の基礎と臨床. 第32回日本眼薬理学会 プロシーディング. 眼薬理 27, 45-50、2013.

3. 安川 力: 前駆病変と萎縮型加齢黄斑変性の管理と予防的治療. 加齢黄斑変性診療ガイド. あたらしい眼科 20、1651-1660、2013.

4. Ishikawa K, Yoshida S, Nakano S, Nkama T, Kita T, Asato R, Sassa Y, Arita R, Miyazaki M, Enaida H, Oshima Y, Murakami K, Niiro H, Ono J, Matsuda A, Goto Y, Akashi K, Izuhara K, Kubo A, Kono T, Hafezi-Moghadam A, Ishibashi T: Periostin promotes the generation of fibrous membranes in proliferative vitreoretinopathy. FASEB J 1, 131-142, 2014.

5. Ohno-Matsui K, Hirakata A, Inoue M, Akiba M, Ishibashi T: Evaluation of congenital optic disc pits and optic disc colobomas by swept-source optical coherence tomography. Invest Ophthalmol Vis Sci 54, 7769-7778, 2013.

6. Yoshida S, Nakama T, Ishikawa K, Arima M, Tachibana T, Nakao S, Sassa Y, Yasuda M, Enaida H, Oshima Y, Kono T, Ishibashi T: Anti-angiogenic shift in vitreous after vitrectomy in patients with proliferative diabetic retinopathy. Invest Ophthalmol Vis Sci 53, 6997-7003, 2013.

7. Yoshida N, Ikeda Y, Notomi S, Ishikawa K, Murakami Y, Hisatomi T, Enaida H, Ishibashi T: Clinical evidence of sustained chronic inflammatory reaction in Retinitis Pigmentosa. Ophthalmology 120, 100-105, 2013.

8. Yoshida N, Ikeda Y, Notomi S, Ishikawa K, Murakami Y, Hisatomi T, Enaida H, Ishibashi T: Laboratory evidence of sustained chronic inflammatory reaction in Retinitis Pigmentosa. Ophthalmology 120, 5-12, 2013.

9. Enaida H, Hachisuka Y, Yoshinaga Y, Ikeda Y, Hisatomi T, Yoshida S, Oshima Y, Kadonosono K, Ishibashi T: Development and preclinical evaluation of a new viewing filter system to control reflection and enhance dye staining during vitrectomy. Graefes Arch Clin Exp Ophthalmol 251, 441-451, 2013.

10. Nakao S, Ishikawa K, Yoshida S, Kohno R, Miyazaki M, Enaida H, Kono T, Ishibashi T: Altered vascular microenvironment by bevacizumab In diabetic fibrovascular membrane. Retina 33, 957-963, 2013.

11. Murakami Y, Notomi S, Hisatomi T, Nakazawa T, Ishibashi T, Miller JW, Vavvas DG: Photoreceptor cell death and rescue in retinal detachment and degenerations. Prog Retin Eye Res 37, 114-140, 2013.

12. Ishikawa K, Yoshida S, Nakao S, Nakama T, Kita T, Asato R, Sassa Y, Arita R, Miyazaki M, Enaida H, Oshima Y, Murakami N, Niiro H, Ono J, Matsuda A, Goto Y, Akashi K, Izuhara K, Kudo A, Kono T, Hafezi-Moghadam A, Ishibashi T: Periostin promotes the generation of fibrous membranes in proliferative vitreoretinopathy. FASEB J, fj.13-229740, 2013.

13. Terasaki H, Kase S, Shirasawa M, Otsuka H, Hisatomi T, Sonoda S, Ishida S, Ishibashi T, Sakamoto T: TNF-α decreases VEGF secretion in highly polarized RPE cells but increases it in non-polarized RPE cells related to crosstalk between JNK and NF-kB pathways. PLoS One 8, e69994, 2013.

14. Zhang H, Yang Y, Takeda A, Yoshimura T, Oshima Y, Sonoda KH, Ishibashi T: A novel platelet-activating factor receptor antagonist inhibits choroidal neovascularization and subretinal fibrosis. Plos One 8, e68173, 2013.

15. Gojobori T, Kono T, Ishibashi T: Comparison of gene expression profile of epiretinal membranes obtained from eyes with proliferative vitreoretinopathy to that of secondary epiretinal membranes. Plos One 8, e54191, 2013.

16. Notomi S, Hisatomi T, Murakami Y, Terasaki H, Sonoda S, Asato R, Takeda A, Ikeda Y, Enaida H, Sakamoto T, Ishibashi T: Dynamic increase in extracellular ATP accelerates photoreceptor cell apoptosis via ligation of P2RX7 in subretinal hemorrhage. Plos One 8, e53338, 2013.

17. Shirasawa M, Sonoda S, Terasaki H, Arimura N, Otsuka H, Yamashita T, Uchino E, Hisatomi T, Ishibashi T, Sakamoto T: TNF-α disrupts morphologic and functional barrier properties of polarized retinal pigment epithelium. Exp Eye Res 110, 59-69, 2013.

18. Ishibashi T; LEVEL-J Study Group: Maintenance therapy with pegaptanib sodium for neovascular age-related macular degeneration: an exploratory study in Japanese patients (LEVEL-J study). Jpn J Ophthalmol 57, 417-423, 2013.

19. Okubo A, Unoki K, Yoshikawa H, Ishibashi T, Sameshima M, Sakamoto T: Hyperreflective dots surrounding the central retinal artery and vein in optic disc melanocytoma revealed by spectral domain optical coherence tomography. Jpn J Ophthalmol 57, 108-112, 2013.

20. Takihara Y, Inatani M, Ogata-Iwao M, Kawai M, Inoue T, Iwao K, Tanihara H: Prospective clinical study of trabeculectomy for open-angle glaucoma in phakic vs pseudophakic eyes after phacoemulsification. JAMA Ophthalmol, in press, 2014.

21. Iwao K, Inatani M, Seto T, Takihara Y, Ogata-Iwao M, Okinami S, Tanihara H: Long-term outcomes and prognostic factors for trabeculectomy with mitomycin C in eyes with uveitic glaucoma: a retrospective cohort study. J Glaucoma, in press.

22. Ogata-Iwao M, Inatani M, Takihara Y, Inoue T, Iwao K, Tanihara H: A prospective comparison between trabeculectomy with mitomycin C and phacotrabeculectomy with mitomycin C. Acta Ophthalmologica 91, e500-501, 2013.

23. Kameda T, Inoue T, Inatani M, Tanihara H, Japanese Phaco-Goniosynechialysis Multicenter Study Group: Long-term Efficacy of Goniosynechialysis Combined with Phacoemulsification for Primary Angle Closure. Graefes Arch Clin Exp Ophthalmol 251, 825-830, 2013.

24. 稲谷 大: 緑内障濾過手術. 眼科 55、1332-1339、2013.

25. Fukuda S, Ohneda O, Oshika T: Oxidative stress retards vascular development before neural degeneration occurs in retinal degeneration rd1 mice. Graefes Arch Clin Exp Ophthalmol 252, 411-416, 2014.

26. Fukuda S, Nagano M, Yamashita T, Kimura K, Tsuboi I, Salazar G, Ueno S, Kondo M, Kunath T, Oshika T, Ohneda O: Functional endothelial progenitor cells selectively recruit neurovascular protective monocyte-derived F4/80(+)/Ly6c(+) macrophages in a mouse model of retinal degeneration. Stem Cells 31, 2149-2161, 2013.

27. Wolf S, Balciuniene VJ, Laganovska G, Menchini U, Ohno-Matsui K, Sharma T, Wong TY, Silva R, Pilz S, Gekkieva M; RADIANCE Study Group: RADIANCE: A randomized controlled study of ranibizumab in patients with choroidal neovascularization secondary to pathologic myopia. Ophthalmology, in press.

28. Khor CC, Miyake M, Chen LJ, Shi Y, Barathi VA, Qiao F, Nakata I, Yamashiro K, Zhou X, Tam PO, Cheng CY, Tai ES, Vithana EN, Aung T, Teo YY, Wong TY, Moriyama M, Ohno-Matsui K, Mochizuki M, Matsuda F; Nagahama Study Group, Yong RY, Yap EP, Yang Z, Pang CP, Saw SM, Yoshimura N: Genome-wide association study identifies ZFHX1B as a susceptibility locus for severe myopia. Hum Mol Genet 22, 5288-5294, 2013.

29. Takahashi H, Ishizuka A, Miyanaga M, Kawaguchi T, Ohno-Matsui K, Mochizuki M: Choroidal thickness in convalescent Vogt-Koyanagi-Harada disease. RETINA, in press.

30. Shinohara K, Moriyama M, Shimada N, Tanaka Y, Ohno-Matsui K: Myopic stretch lines: linear lesions in fundus of eyes with pathologic myopia that differ from lacquer cracks. RETINA, in press.

31. Koh VT, Nah GK, Chang L, Yang AH, Lin ST, Ohno-Matsui K, Wong TY, Saw SM: Pathologic

changes in highly myopic eyes of young males in singapore. Ann Acad Med Singapore 42, 216-224, 2013.

32. Shimada N, Tanaka Y, Tokoro T, Ohno-Matsui K: Natural course of myopic traction maculopathy and factors associated with progression or resolution. Am J Ophthalmol 156, 948-957, 2013.

33. Miyake M, Yamashiro K, Nakanishi H, Nakata I, Akagi-Kurashige Y, Tsujikawa A, Moriyama M, Ohno-Matsui K, Mochizuki M, Yamada R, Matsuda F, Yoshimura N: Insulin-like growth factor 1 is not associated with high myopia in a large Japanese cohort. Mol Vis 19, 1074-1081, 2013.

34. Miyake M, Yamashiro K, Nakanishi H, Nakata I, Akagi-Kurashige Y, Kumagai K, Oishi M, Tsujikawa A, Moriyama M, Ohno-Matsui K, Mochizuki M, Yoshimura N: Evaluation of pigment epithelium-derived factor and complement factor I polymorphisms as a cause of choroidal neovascularization in highly myopic eyes. Invest Ophthalmol Vis Sci 54, 4208-4212, 2013.

35. Yokoi T, Moriyama M, Hayashi K, Shimada N, Tomita M, Yamamoto N, Nishikawa T, Ohno-Matsui K: Predictive factors for comorbid psychiatric disorders and their impact on vision-related quality of life in patients with high myopia. Int Ophthalmol ,in press.

36. Shinohara K, Moriyama M, Shimada N, Nagaoka N, Ishibashi T, Tokoro T, Ohno-Matsui K: Analyses of shape of eyes and structure of optic nerves in eyes with tilted disc syndrome by swept-source optical coherence tomography and three dimensional magnetic resonance imaging. Eye 27, 1233-1241, 2013.

37. Chang L, Pan CW, Ohno-Matsui K, Lin X, Cheung GC, Gazzard G, Koh V, Hamzah H, Tai ES, Lim SC, Mitchell P, Young TL, Aung T, Wong TY, Saw SM: Myopia-related fundus changes in singapore adults with high myopia. Am J Ophthalmol 155, 991-999, 2013.

38. Ohno-Matsui K, Akiba M, Moriyama M: Macular pits and scleral dehiscence in highly myopic eyes with macular chorioretinal atrophy. Retinal Cases Brief Rep 7, 334-337, 2013.

39. Ohno-Matsui K, Kasahara K, Moriyama M: Characteristics of intrachoroidal cavitation located temporal to optic disc in highly myopic eyes. Eye 27, 630-638, 2013.

40. Jonas JB, Spaide RF, Ohno-Matsui K: Macular Bruch's membrane defects and axial length: association with gamma zone and delta zone in peripapillary region. Invest Ophthalmol Vis Sci 54, 1295-1302, 2013.

41. Ohno-Matsui K, Kasahara K, Moriyama M: Detection of Zinn-Haller arterial ring in highly myopic eyes by simultaneous indocyanine green angiography and optical coherence tomography. Am J Ophthalmol 155, 920-926, 2013.

42. Yokoi T, Moriyama M, Hayashi K, Shimada N, Ohno-Matsui K: Evaluation of refractive error after cataract surgery in highly myopic eyes. Int Ophthalmol 33, 343-348, 2013.

43. Hayashi K, Katori N, Kasai K, Kamisasanuki T, Kokubo K, Ohno-Matsui K: Comparisons of nylon monofilament suture to polytetrafluoroethylene sheet for frontalis suspension surgery in eyes with congenital ptosis. Am J Ophthalmol 155, 654-663, 2013.

44. Ishida T, Ohno-Matsui K, Mochizuki M: Polypoidal choroidal vasculopathy in a case with retinitis pigmentosa. Int Ophthalmol 33, 305-308, 2013.

45. Yamashita T, Tanaka M, Kii Y, Nakao K, Sakamoto T: Association between retinal thickness of 64 sectors in posterior pole determined by optical coherence tomography and axial length and body height. Invest Ophthalmol Vis Sci 54, 7478-7482, 2013.

46. Takenouchi K, Shrestha B, Yamakuchi M, Yoshinaga N, Arimura N, Kawaguchi H, Nagasato T, Feil R, Kawahara K, Sakamoto T, Maruyama I, Hashiguchi T: Upregulation of non- β cell-derived vascular endothelial growth factor A increases small cluster of insulin-producing cells in the pancreas. Exp Clin Endocrinol Diabetes, in press.

47. Kamisasanuki T, Katori N, Kasai K, Hayashi K, Kokubo K, Ota Y, Sakamoto T: Adhesiotomy with grafting of fat and perifascial areolar tissue for adhesions of extraocular muscles after trauma or surgery. Graefes Arch Clin Exp Ophthalmol, in press.

48. Kawano H, Ito T, Yamada S, Hashiguchi T, Maruyama I, Hisatomi T, Nakamura M, Sakamoto T: Toxic effects of extracellular histones and their neutralization by vitreous in retinal detachment. Lab Invest, in press.

49. Yamashita T, Kii Y, Tanaka M, Yoshinaga W, Nakao K, Sakamoto T: Relationship between supernormal sectors of retinal nerve fibre layer and axial length in normal eyes. Acta Ophthalmol, in press.

50. Sonoda S, Sakamoto T: Blood component and OCT. Curr Eye Res, in press.

51. Yamashita T, Sakamoto T: Individualized postruring. Retina, in press.

52. Yamashita T, Tanaka M, Kii Y, Nakao K, Sakamoto T: Association between retinal thickness of 64 sectors in posterior pole determined by optical coherence tomography and axial length and body height. Invest Ophthalmol Vis Sci 54, 7478-7482, 2013.

53. Matsuo Y, Sakamoto T, Yamashita T, Tomita M, Shirasawa M, Terasaki H: Comparisons of choroidal thickness of normal eyes obtained by two different spectral-domain OCT and one swept-source OCT instruments. Invest Ophthalmol Vis Sci 54, 7630-7636, 2013.

54. Okubo A, Sameshima M, Sakamoto T: Choroidal venous pulsations at an arterio-venous crossing in polypoidal choroidal vasculopathy. Korean J Ophthalmol 27, 384-387, 2013.

55. Uemura A, Otsuji F, Nakano T, Sakamoto T: Vitreomacular interface and outer foveal microstructure in fellow eyes of patients with unilateral macular holes. Retina, in press.

56. Sonoda S, Sakamoto T, Otsuka H, Yoshinaga N, Yamashita T, Ki-I Y, Okubo A, Yamashita T, Arimura N: Responsiveness of eyes with polypoidal choroidal vasculopathy with choroidal hyperpermeability to intravitreal ranibizumab. BMC Ophthalmol 13, 43, 2013.

57. Sonoda S, Sakamoto T, Shirasawa M, Yamashita T, Otsuka H, Terasaki H: Correlation between reflectivity of subretinal fluid in OCT images and concentration of intravitreal VEGF in eyes with diabetic macular edema. Invest Ophthalmol Vis Sci 54, 5367-5374, 2013.

58. Yamashita T, Kii Y, Tanaka M, Sakamoto T: Relationship between position of peak retinal nerve fiber layer thickness and retinal arteries on sectoral retinal nerve fiber layer thickness. Invest Ophthalmol Vis Sci 54, 5481-5488, 2013.

59. Sonoda S, Sakamoto T, Yamashita T, Shirasawa M, Otsuka T, Sonoda Y: Retinal morphological changes and concentrations of cytokines in eyes with diabetic macular edema. Retina, in press.

60. Otsuka H, Kawano H, Sonoda S, Nakamura M, Sakamoto T: Particle-induced endophthalmitis: Possible mechanisms of sterile endophthalmitis after intravitreal triamcinolone. Invest Ophthalmol Vis Sci 11, 54, 1758-1766, 2013.

61. Ki-I Y, Yamashita T, Uemura A, Sakamoto T: Long-term intraocular pressure changes after combined phacoemulsification, intraocular lens implantation, and vitrectomy. Jpn J Ophthalmol 57, 57-62, 2013.

62. Yamashita T, Yamashita T, Kawano H, Sonoda Y, Yamakiri K, Sakamoto T: Early Imaging of Macular Hole Closure: A Diagnostic Technique and Its Quality for Gas-Filled Eyes with Spectral Domain Optical Coherence Tomography. Ophthalmologica 229, 43-49, 2013.

63. Hirooka K, Tenkumo K, Fujiwara A, Baba T, Sato S, Shiraga F: Evaluation of peripapillary choroidal thickness in patients with normal-tension glaucoma. BMC Ophthalmology ,in press.

64. Nitta E, Hirooka K, Tenkumo K, Fujita T, Nishiyama A, Nakamura T, Itano T, Shiraga F: Aldosterone: a mediator of retinal ganglion cell death and the potential role in the pathogenesis in normal-tension glaucoma. Cell Death and Disease, in press.

65. Morizane Y, Shiraga F, Kimura S, Hosokawa M, Shiode Y, Kawata T, Hosogi M, Shirakata Y, Okanouchi T: Autologous transplantation of the internal limiting membrane for refractory macular

holes. Am J Ophthalmolo, in press.

66. Tenkumo K, Hirooka K, Baba T, Nitta E, Sato S, Shiraga F: Evaluation of relationship between retinal nerve fiber layer thickness progression and visual field progression in patients with glaucoma. Jpn J Ophthalmol, in press.

67. Nitta E, Shiraga F, Shiragami C, Fukuda K, Yamashita A, Fujiwara A: Displacement of the retina and its recovery after vitrectomy in idiopathic epiretinal membrane. Am J Ophthalmol 155, 1014-1020, 2013.

68. Sato S, Hirooka K, Baba T, Tenkumo K, Nitta E, Shiraga F: Correlation between the ganglion cell-inner plexiform layer thickness measured with cirrus HD-OCT and macular visual field sensitivity measured with microperimetry. Invest Ophthalmol Vis Sci 54, 3046-3051, 2013.

69. Shiraga F, Takasu I, Fukuda K, Fujita T, Yamashita A, Hirooka K, Shirakata Y, Morizane Y, Fujiwara A: Modified vitreous surgery for symptomatic lamellar macular hole with epiretinal membrane containing macular pigment. Retina 33, 1263-1269, 2013.

70. Nakano Y, Nomoto H, Fukuda K, Yamaji H, Fujita T, Inoue Y, Shiraga F: Combined 25-gauge vitrectomy and cataract surgery with toric IOL implantation in eyes with idiopathic epiretinal membrane. J Cataract Refr Surg 39, 686-693, 2013.

71. 森實祐基、白神史雄: 特集 抗VEGF薬をどう扱う? PDTとの併用療法. 臨床眼科 67、1850-1859、2013.

72. Otsuji T, Nagai Y, Sho K, Tsumura A, Koike N, Tsuda M, Nishimura T, Takahashi K: Initial non-responder to ranibizumab in the treatment of age-related macular degeneration(AMD). Clinical Ophthalmology 7, 1487-1490, 2013.

73. 中道悠太、高橋寛二、石黒利充、上田義朗、有澤章子、垰本慎:近視性脈絡膜新生血管に黄斑円孔網膜剥離を合併した3例. 臨床眼科 67、1393-1401、2013.

74. 河合まり子、有澤章子、永井由巳、城信雄、吉川匡宣、高橋寛二:ドルーゼン様網膜色素上皮剥離からの長期経過で網膜色素上皮裂孔を生じた1例. 臨床眼科 67、1469-1475、2013.

75. 高橋寛二:特集加齢黄斑変性 3. 病型分類. 眼科 55、1115-1122、2013.

76. 高橋寛二:加齢黄斑変性に対するラニビズマブの実践的投与方法. 臨眼 67、818-1828、2013.

77. 高橋寛二:特集加齢黄斑変性の新展開 3.加齢黄斑変性の病態. Prog Med 33、2071-2077、2013.

78. 高橋寛二:加齢黄斑変性の治療指針—アルゴリズムは何をあらわすか—. あたらしい眼科 30、

1649-1650、2013.

79. 髙橋寛二:ポリープ状脈絡膜血管症、飯田知弘編、専門医のための眼科診療クオリファイ 18. 眼底 OCT のすべて、中山書店、東京、116-125、2013.

80. Suto K, Hosono K, Takahashi M, Hirami Y, Arai Y, Nagase Y, Ueno S, Terasaki H, Minoshima S, Kondo M, Hotta Y: Clinical phenotype in ten unrelated Japanese patients with mutations in the EYS gene. Ophthalmic Genet 35, 25-34, 2014.

81. Kumagai K, Tsujikawa A, Muraoka Y, Akagi-Kurashige Y, Murakami T, Miyamoto K, Yamada R, Yoshimura N: Three-dimensional optical coherence tomography evaluation of vascular changes at arteriovenous crossings. Invest Ophthalmol Vis Sci, in press.

82. Akagi-Kurashige Y, Tsujikawa A, Ooto S, Makiyama Y, Muraoka Y, Kumagai K, Uji A, Arichika S, Murakami T, Miyamoto K, Yoshimura N: Retinal microstructural changes in eyes with resolved branch retinal vein occlusion: an adaptive optics scanning laser ophthalmoscopy study. Am J Ophthalmol, in press.

83. Ueda-Arakawa N, Ooto S, Ellabban AA, Takahashi A, Oishi A, Tamura H, Yamashiro K, Tsujikawa A, Yoshimura N: Macular choroidal thickness and volume of eyes with reticular pseudodrusen using swept-source optical coherence tomography. Am J Ophthalmol, in press.

84. Muraoka Y, Tsujikawa A, Kumagai K, Akagi-Kurashige Y, Ogino K, Murakami T, Miyamoto K, Yoshimura N: Retinal vessel tortuosity associated with central retinal vein occlusion: an optical coherence tomography study. Invest Ophthalmol Vis Sci 55, 134-141, 2014.

85. Ogino K, Tsujikawa A, Yamashiro K, Ooto S, Oishi A, Nakata I, Miyake M, Takahashi A, Ellabban AA, Yoshimura N: Multimodal evaluation of macular function in age-related macular degeneration. Jpn J Ophthalmol 2013.

86. Oishi M, Yamashiro K, Miyake M, Akagi-Kurashige Y, Kumagai K, Nakata I, Nakanishi H, Yoshikawa M, Oishi A, Gotoh N, Tsujikawa A, Yamada R, Matsuda F, Yoshimura N: Association between ZIC2, RASGRF1, and SHISA6 genes and high myopia in Japanese subjects. Invest Ophthalmol Vis Sci 54, 7492-7497, 2013.

87. Muraoka Y, Murakami T, Nishijima K, Akagi T, Uji A, Horii T, Ueda-Arakawa N, Yoshikawa M, Tsujikawa A, Yoshimura N: Association between retinal venular dilation and serous retinal detachment in diabetic macular edema. Retina 2013.

88. Ooto S, Ellabban AA, Ueda-Arakawa N, Oishi A, Tamura H, Yamashiro K, Tsujikawa A, Yoshimura N: Reduction of retinal sensitivity in eyes with reticular pseudodrusen. Am J

Ophthalmol 156, 1184-1191 e1182, 2013.

89. Miyake M, Yamashiro K, Akagi-Kurashige Y, Kumagai K, Nakata I, Nakanishi H, Oishi A, Tsujikawa A, Yamada R, Matsuda F, Yoshimura N: Vascular endothelial growth factor gene and the response to anti-vascular endothelial growth factor treatment for choroidal neovascularization in high myopia. Ophthalmology 121, 225-233, 2014.

90. Nakata I, Yamashiro K, Kawaguchi T, Gotoh N, Nakanishi H, Akagi-Kurashige Y, Miyake M, Tsujikawa A, Oishi A, Saito M, Iida T, Yamada R, Matsuda F, Yoshimura N: Association between the cholesteryl ester transfer protein gene and polypoidal choroidal vasculopathy. Invest Ophthalmol Vis Sci 54, 6068-6073, 2013.

91. Nakata I, Yamashiro K, Nakanishi H, Akagi-Kurashige Y, Miyake M, Tsujikawa A, Matsuda F, Yoshimura N: Prevalence and characteristics of age-related macular degeneration in the Japanese population: the Nagahama study. Am J Ophthalmol 156, 1002-1009 e1002, 2013.

92. Muraoka Y, Tsujikawa A, Kumagai K, Akiba M, Ogino K, Murakami T, Akagi-Kurashige Y, Miyamoto K, Yoshimura N: Age- and hypertension-dependent changes in retinal vessel diameter and wall thickness: an optical coherence tomography study. Am J Ophthalmol 156, 706-714, 2013.

93. Ellabban AA, Tsujikawa A, Ooto S, Yamashiro K, Oishi A, Nakata I, Miyake M, Akagi-Kurashige Y, Ueda-Arakawa N, Arichika S, Yoshitake S, Takahashi A, Yoshimura N: Focal choroidal excavation in eyes with central serous chorioretinopathy. Am J Ophthalmol 156, 673-683, 2013.

94. Ogino K, Tsujikawa A, Yamashiro K, Ooto S, Oishi A, Nakata I, Miyake M, Yoshimura N: Intravitreal injection of ranibizumab for recovery of macular function in eyes with subfoveal polypoidal choroidal vasculopathy. Invest Ophthalmol Vis Sci 54, 3771-3779, 2013.

95. Muraoka Y, Tsujikawa A, Murakami T, Ogino K, Miyamoto K, Yoshimura N: Branch retinal vein occlusion-associated subretinal hemorrhage. Jpn J Ophthalmol 57, 275-282, 2013.

96. Ooto S, Hangai M, Takayama K, Ueda-Arakawa N, Tsujikawa A, Yamashiro K, Oishi A, Hanebuchi M, Yoshimura N: Comparison of cone pathologic changes in idiopathic macular telangiectasia types 1 and 2 using adaptive optics scanning laser ophthalmoscopy. Am J Ophthalmol 155, 1045-1057 e1044, 2013.

97. Ueda-Arakawa N, Ooto S, Tsujikawa A, Yamashiro K, Oishi A, Yoshimura N: Sensitivity and specificity of detecting reticular pseudodrusen in multimodal imaging in Japanese patients. Retina 33, 490-497, 2013.

98. Ota T, Tsujikawa A, Murakami T, Ogino K, Muraoka Y, Kumagai K, Akagi-Kurashige Y, Miyamoto K, Yoshimura N: Subfoveal serous retinal detachment associated with extramacular branch retinal vein occlusion. C lin Ophthalmol 7, 237-241, 2013.

99. Ellabban AA, Tsujikawa A, Matsumoto A, Yamashiro K, Oishi A, Ooto S, Nakata I, Akagi-Kurashige Y, Miyake M, Elnahas HS, Radwan TM, Zaky KA, Yoshimura N: Three-dimensional tomographic features of dome-shaped macula by swept-source optical coherence tomography. Am J Ophthalmol 155, 320-328 e322, 2013.

100. Nakagawa S, Yamashiro K, Tsujikawa A, Otani A, Tamura H, Ooto S, Yoshimura N: The time course changes of choroidal neovascularization in angioid streaks. Retina 33, 825-833, 2013.

101. Ueda-Arakawa N, Ooto S, Nakata I, Yamashiro K, Tsujikawa A, Oishi A, Yoshimura N: Prevalence and genomic association of reticular pseudodrusen in age-related macular degeneration. Am J Ophthalmol 155, 260-269 e2, 2013.

102. Muraoka Y, Tsujikawa A, Murakami T, Ogino K, Kumagai K, Miyamoto K, Uji A, Yoshimura N: Morphologic and functional changes in retinal vessels associated with branch retinal vein occlusion. Ophthalmology 120, 91-99, 2013.

103. Nakata I, Tsujikawa A, Yamashiro K, Otani A, Ooto S, Akagi-Kurashige Y, Ueda-Arakawa N, Iwama D, Yoshimura N: Two-year outcome of photodynamic therapy combined with intravitreal injection of bevacizumab and triamcinolone acetonide for polypoidal choroidal vasculopathy. Graefes Arch Clin Exp Ophthalmol 251, 1073-1080, 2013.

104. Oishi A, Yamashiro K, Tsujikawa A, Ooto S, Tamura H, Nakata I, Miyake M, Yoshimura N: Long-term effect of intravitreal injection of anti-VEGF agent for visual acuity and chorioretinal atrophy progression in myopic choroidal neovascularization. Graefes Arch Clin Exp Ophthalmol 251, 1-7, 2013.

105. Iguchi Y, Asami T, Ueno S, Ushida H, Maruko R, Oiwa K, Terasaki H: Changes in vitreous temperature during intravitreal surgery. Invest Ophthalmol Vis Sci, 2014 [Epub ahead of print]

106. Hibi N, Kondo M, Ishikawa K, Ueno S, Komeima K, Terasaki H: Transient increase of retinal nerve fiber layer thickness after macular hole surgery. Int Ophthalmol, in press.

107. Ueno S, Ito Y, Maruko R, Kondo M, Terasaki H: Choroidal atrophy in a patient with paraneoplastic retinopathy and anti-TRPM1 antibody. Clin Ophthalmol 8, 369-373, 2014.

108. Hibi N, Ueno S, Ito Y, Piao CH, Kondo M, Terasaki H: Relationship between retinal layer thickness and focal macular electroretinogram components after epiretinal membrane surgery.

Invest Ophthalmol Vis Sci 54, 7207-7014, 2013.

109. Ueno S, Nishiguchi KM, Tanioka H, Enomoto A, Yamanouchi T, Kondo M, Yasuma TR, Yasuda S, Kuno N, Takahashi M, Terasaki H: Degeneration of retinal on bipolar cells induced by serum including autoantibody against TRPM1 in mouse model of paraneoplastic retinopathy. PLoS One 8, e81507, 2013.

110. Ueno S, Koyasu T, Kominami T, Sakai T, Kondo M, Yasuda S, Terasaki H: Focal cone ERGs of rhodopsin Pro347Leu transgenic rabbits.Vision Res 91, 118-123, 2013.

111. Nishiguchi KM, Ushida H, Tomida D, Kachi S, Kondo M, Terasaki H: Age-dependent alteration of intraocular soluble heparan sulfate levels and its implications for proliferative diabetic retinopathy. Mol Vis 19, 1125-1131, 2013.

112. Kawano K, Ito Y, Kondo M, Ishikawa K, Kachi S, Ueno S, Iguchi Y, Terasaki H: Displacement of foveal area toward optic disc after macular hole surgery with internal limiting membrane peeling. Eye (Lond) 27, 871-877, 2013.

113. Nishiguchi KM, Tearle RG, Liu YP, Oh EC, Miyake N, Benaglio P, Harper S, Koskiniemi-Kuendig H, Venturini G, Sharon D, Koenekoop RK, Nakamura M, Kondo M, Ueno S, Yasuma TR, Beckmann JS, Ikegawa S, Matsumoto N, Terasaki H, Berson EL, Katsanis N, Rivolta C: Whole genome sequencing in patients with retinitis pigmentosa reveals pathogenic DNA structural changes and NEK2 as a new disease gene. Proc Natl Acad Sci U S A 110, 16139-16144, 2013.

114. Fujimoto S, Ikuno Y, Nishida K: Postoperative optical coherence tomographic appearance and relation to visual acuity after vitrectomy for myopic foveoschisis. Am J Ophthalmol 156: 968-973, 2013.

115. Gao X, Ikuno Y, Fujimoto S, Nishida K: Risk factors for development of full-thickness macular holes after pars plana vitrectomy for myopic foveoschisis. Am J Ophthalmol 155: 1021-1027, 2013.

116. 村上晶: 総説:眼科遺伝子診療をめざした遺伝情報解析. 日眼会誌 118、283-298、2014.

117. Mochizuki Y, Iida A, Lyons E, Kageyama R, Nakauchi H, Murakami A, Watanabe S. Use of cell type-specific transcriptome to identify genes specifically involved in Müller glia differentiation during retinal development. Dev Neurobiol 74, 426-437, 2014.

118. Usui A, Mochizuki Y, Iida A, Miyauchi E, Satoh S, Sock E, Nakauchi H, Aburatani H, Murakami A, Wegner M, Watanabe S: The early retinal progenitor-expressed gene Sox11 regulates the timing of the differentiation of retinal cells. Development 140, 740-750, 2013.

119. Usui A, Iwagawa T, Mochizuki Y, Iida A, Wegner M, Murakami A, Watanabe S: Expression of Sox4 and Sox11 is regulated by multiple mechanisms during retinal development. FEBS Lett 587, 358-363, 2013.

120. Oshitari T, Bikbova G, Yamamoto S: Increased expression of phosphorylated c-Jun and phosphorylated c-Jun N-terminal kinase associated with neuronal cell death in diabetic and high glucose exposed rat retinas. Brain Res Bull 101, 18-25, 2014.

121. Oshitari T, Yamamoto S, Roy S: Increased expression of c-Fos, c-Jun and c-Jun N-terminal kinase associated with neuronal cell death in retinas of diabetic patients. Curr Eye Res 2013 (in press).

122. Hagiwara A, Mitamura Y, Kumagai K, Baba T, Yamamoto S: Photoreceptor impairment on optical coherence tomographic images in patients with retinitis pigmentosa. Br J Ophthalmol 97, 237-238, 2013.

123. Yokouchi H, Kitahashi M, Oshitari T, Yamamoto S: Intravitreal bevacizumab for iris tumor metastasized from large cell neuroendocrine carcinoma of lung. Graefes Arch Clin Exp Ophthalmol 251, 2243-2245, 2013.

124. Tatsumi T, Yamamoto S, Uehara J, Sugawara T, Baba T, Inoue M, Hata H, Mitamura Y: Panretinal photocoagulation with simultaneous cryoretinopexy or intravitreal bevacizumab for neovascular glaucoma. Graefes Arch Clin Exp Ophthalmol 251, 1355-1360, 2013.

125. Tawada A, Sugawara T, Ogata K, Hagiwara A, Yamamoto S: Improvement of central retinal sensitivity six months after isopropyl unoprostone in patients with retinitis pigmentosa. Ind J Ophthalmol 61, 95-99, 2013.

126. Tatsumi T, Yamamoto S, Shimoyama I: Study of retinal nerve fiber layer in normal and glaucomatous eyes with matched filter technique. International Medical Journal 19, 364-368, 2013.

127. Yokouchi H, Eto K, Nishimura W, Takeda N, Kaburagi Y, Yamamoto S, Yasuda K: Angiopoietin-like protein 4 (ANGPTL4) is induced by high glucose in retinal pigment epithelial cells and exhibits potent angiogenic activity on retinal endothelial cells. Acta Ophthalmol 91, e289-97, 2013.

128. Bikbova G, Oshitari T, Yamamoto S: Neurite regeneration in adult rat retinas exposed to advanced glycation end-products and regenerative effects of neurotrophin-4. Brain Res 1534, 33-45, 2013.

129. Mitamura Y, Mitamura-Aizawa S, Katome T, Naito T, Hagiwara A, Kumagai K, Yamamoto S: Photoreceptor impairment and restoration on optical coherence tomographic image. J Ophthalmol 2013;2013:518170. doi: 10.1155/2013/518170. Epub 2013 Apr 3.

130. Baba T, Uehara J, Kitahashi M, Yokouchi H, Kubota-Taniai M, Oshitari T, Yamamoto S: Retinal pigment epithelium tear after vitrectomy for vitreomacular traction syndrome in an eye with retinal angiomatous proliferation. Case Rep Ophthalmol 4, 165-171, 2013.

131. Shinojima A, Kawamura A, Mori Y, Yuzawa M: Morphological features of focal choroidal excavation on spectral domain-optical coherence tomography with simultaneous angiography. Retina (in press), 2014.

132. 北川貴子、湯澤美都子: 近視性脈絡膜新生血管に対するペガプタニブナトリウム硝子体内投与1年後の治療効果の比較. 日眼会誌 117、727-734、2013.

133. Kawamura A, Yuzawa M, Mori R, Haruyama M, Tanaka K: Indocyanine green angiographic and optical coherence tomographic findings support classification of polypoidal choroidal vasculopathy into two types. Acta Ophthalmol 91, e474-e481, 2013.

134. Yuzawa M, Fujita K, Tanaka E, Wang EC: Assessing quality of life in the treatment of patients with age-related macular degeneration: clinical research findings and recommendations for clinical practice. Clin Ophthalmol 7, 1325-1332, 2013.

135. 北川貴子、湯澤美都子: 近視性脈絡膜新生血管に対するペガプタニブナトリウム硝子体内投与1年後の治療成績. 日眼会誌 117、344-350、2013.

136. Mori R, Yuzawa M, Akaza E, Haruyama M: Treatment results at 1 year of ranibizumab therapy for polypoidal choroidal vasculopathy in eyes with good visual acuity. Jpn J Ophthalmol 57, 365-371, 2013.

137. Fujita K, Shinoda K, Matsumoto CS, Imamura Y, Mizutani Y, Tanaka E, Mizota A, Oda K, Yuzawa M: Low luminance visual acuity in patients with central serous chorioretinopathy. Clin Exo Optom 96, 100-105, 2013.

138. Saito M, Iida T, Freund KB, Kano M, Yannuzzi LA: Clinical findings of acquired vitelliform lesions associated with retinal pigment epithelial detachments. Am J Ophthalmol 157, 355-365, 2014.

139. Saito M, Iida T, Kano M, Itagaki K: Five-year results of photodynamic therapy with and without supplementary antivascular endothelial growth factor treatment for polypoidal choroidal vasculopathy. Graefes Arch Clin Exp Ophthalmol 252, 227-235, 2014.

140. Maruko I, Iida T, Oyamada H, Sugano Y, Ojima A, Sekiryu T: Choroidal thickness changes after

intravitreal ranibizumab and photodynamic therapy in Recurrent polypoidal choroidal vasculopathy. Am J Ophthalmol 156, 548-556, 2013.

141. Saito M, Iida T, Kano M, Itagaki K: Two-year results of intravitreal ranibizumab for polypoidal choroidal vasculopathy with recurrent or residual exudation. Eye 27, 931-939, 2013.

142. Saito M, Iida T, Kano M, Itagaki K: Two-year results of combined intravitreal ranibizumab and photodynamic therapy for polypoidal choroidal vasculopathy. Graefes Arch Clin Exp Ophthalmol 251, 2099-2110, 2013.

143. Sugano Y, Iida T, Maruko I, Ojima A, Sekiryu T: Choroidal thickness outside the laser irradiation area after photodynamic therapy in polypoidal choroidal vasculopathy. Jpn J Ophthalmol 57, 294-300, 2013.

144. Saito M, Saito W, Hashimoto Y, Yoshizawa C, Shinmei Y, Noda K, Ishida S: Correlation between decreased choroidal blood velocity and the pathogenesis of acute zonal occult outer retinopathy. Clin Experiment Ophthalmol 42, 139-150, 2013.

145. Hashimoto Y, Saito W, Saito M, Hirooka K, Fujiya A, Yoshizawa C, Noda K, Ishida S: Retinal outer layer thickness increases after vitrectomy for epiretinal membrane and visual improvement positively correlates with photoreceptor outer segment length. Graefes Arch Clin Exp Ophthalmol 252, 219-226, 2013.

146. Saito M, Saito W, Hashimoto Y, Yoshizawa C, Fujiya A, Noda K, Ishida S: Macular choroidal blood flow velocity decreases with regression of acute central serous chorioretinopathy. Br J Ophthalmol 97, 775-780, 2013.

147. Kato K, Hirano K, Nagasaka T, Matsunaga K, Takashima Y, Kondo M: Histopathological examination of Acanthamoeba sclerokeratitis. Clin Ophthalmol, in press.

148. Sugimoto M, Matsubara H, Miyata R, Matsui Y, Ichio A, Kondo M: Ultra-WideField fluorescein angiography by oral administration of fluorescein. Acta Ophthalmol, in press.

149. Morita Y, Kimura K, Fujitsu Y, Enomoto A, Ueno S, Kondo M, Sonoda KH: Autoantibodies to transient receptor potential cation channel, subfamily M, member 1 in a Japanese patient with melanoma-associated retinopathy. Jpn J Ophthalmol, in press.

150. Toyoda H, Azuma E, Kawasaki Y, Iwasa T, Ohashi H, Otsuki S, Iwamoto S, Hirayama M, Itoh-Habe N, Wada H, Kondo M, Keida Y, Ito T, Komada Y: Cord blood transplantation combined with rituximab for Wiskott-Aldrich syndrome with autoimmune thrombotic thrombocytopenic purpura. J Allergy Clin Immunol 132, 226-227, 2013.

151. Obata R, Takahashi H, Ueta T, Yuda K, Kure K, Yanagi Y: Tomographic and angiographic characteristics of eyes with macular focal choroidal excavation. Retina 33, 1201-1210, 2013.

152. Fujimura S, Ueta T, Takahashi H, Obata R, Smith RT, Yanagi Y: Characteristics of fundus autofluorescence and drusen in the fellow eyes of Japanese patients with exudative age-related macular degeneration. Graefes Arch Clin Exp Ophthalmol 251, 1-9, 2013.

153. Kadonosono K, Arakawa A, Inoue M, Yamane S, Uchio E, Yamakawa T, Taguri M, Morita S, Ridgeley JR, Yanagi Y: Internal limiting membrane contrast after staining with indocyanine green and brilliant blue G during macular surgery. Retina 33, 812-817, 2013.

154. Iriyama A, Aihara Y, Yanagi Y: Outer retinal tubulation in inherited retinal degenerative disease. Retina 33, 1462-1465, 2013.

155. Kadonosono K, Yamane S, Arakawa A, Inoue M, Yamakawa T, Uchio E, Yanagi Y, Amano S: Endovascular cannulation with a microneedle for central retinal vein occlusion. JAMA Ophthalmol 131, 783-786, 2013.

156. Tan X, Aoki A, Yanagi Y: Color vision abnormality as an initial presentation of the complete type of congenital stationary night blindness. Clin Ophthalmol 7, 1587-1590, 2013.

157. Araki M, Matsuoka T, Miyamoto K, Kusunoki S, Okamoto T, Murata M, Miyake S, Aranami T, Yamamura T: Efficacy of the anti-IL-6 receptor antibody tocilizumab in neuromyelitis optica: A pilot study. Neurology, in press, 2014.

158. Chihara N, Aranami T, Oki S, Matsuoka T, Nakamura M, Kishida H, Yokoyama K, Kuroiwa Y, Hattori N, Okamoto T, Murata M, Toda T, Miyake S, Yamamura T: Plasmablasts as migratory IgG producing cells in the pathogenesis of neuromyelitis optica. PLOS One 8, e83036, 2013.