Gefäßverschlüsse des Auges

- Diagnostik und Therapie

Lars-Olof Hattenbach

Augenklinik des
Klinikums Ludwigshafen

Nicolas Feltgen

Augenklinik
Universitätsmedizin Göttingen

AAD 2019

Handouts: Download PDF

www.klilu.de

AAD 2019

Kliniken A-Z
Institute A-Z
Zentren A-Z

Unsere Kliniken und Fachbereiche

Wir kümmern uns um Sie auf kompetente Weise, in unserer vielseitigen Leistungsstärke, mit innovativen Behandlungsmethoden, partnerschaftlich und umsorgend.

Als Krankenhaus der Maximalversorgung bieten wir unseren Patienten in unseren Kliniken, Zentren und Instituten ein umfassendes medizinisches Leistungsspektrum an und schaffen durch modernste Ausstattung und Medizintechnik der neuesten Generation beste Voraussetzungen, damit auch Sie mit Ihrem Anliegen optimal in unseren medizinischen Fachbereichen versorgt werden.

- **Kliniken A - Z**
- **Zentren A - Z**
- **Institute A - Z**

Unsere Klinik
Unsere Leistungen
Team
Sprechstunden / Ambulanzen
Prozessmanagement
Beratung & Unterstützung
Studienzentrum
Zuweiserinformationen
Kontakt
Stellenangebote

Zuweiserinformationen

Zur Augenklinik mit einer Station gehören insgesamt 30 Betten.

Downloads

Hier finden Sie ausgewählte Unterlagen, Präsentationen und Fachvorträge der Augenklinik am Klinikum Ludwigshafen.

Bimanuelle Intraokuläre Mikronahttechnik

Retten - Repositionieren - Rekonstruieren (5.7 MB)

Gefäßverschlüsse des Auges

Neovaskuläre Komplikationen beim RVV (982KB)
Leitlinienorientierte Behandlungsstrategien beim RAV (1.6 MB)
Retinaler Venenverschluss - Empfehlungen der Fachgesellschaften (956KB)

Venöse retinale Gefäßverschlüsse

Diagnostik, Risikofaktoren, Therapie (5.2 MB)

Venöse retinale Gefäßverschlüsse:

Diagnostik, Risikofaktoren, Therapie

Lars-Olof Hattenbach

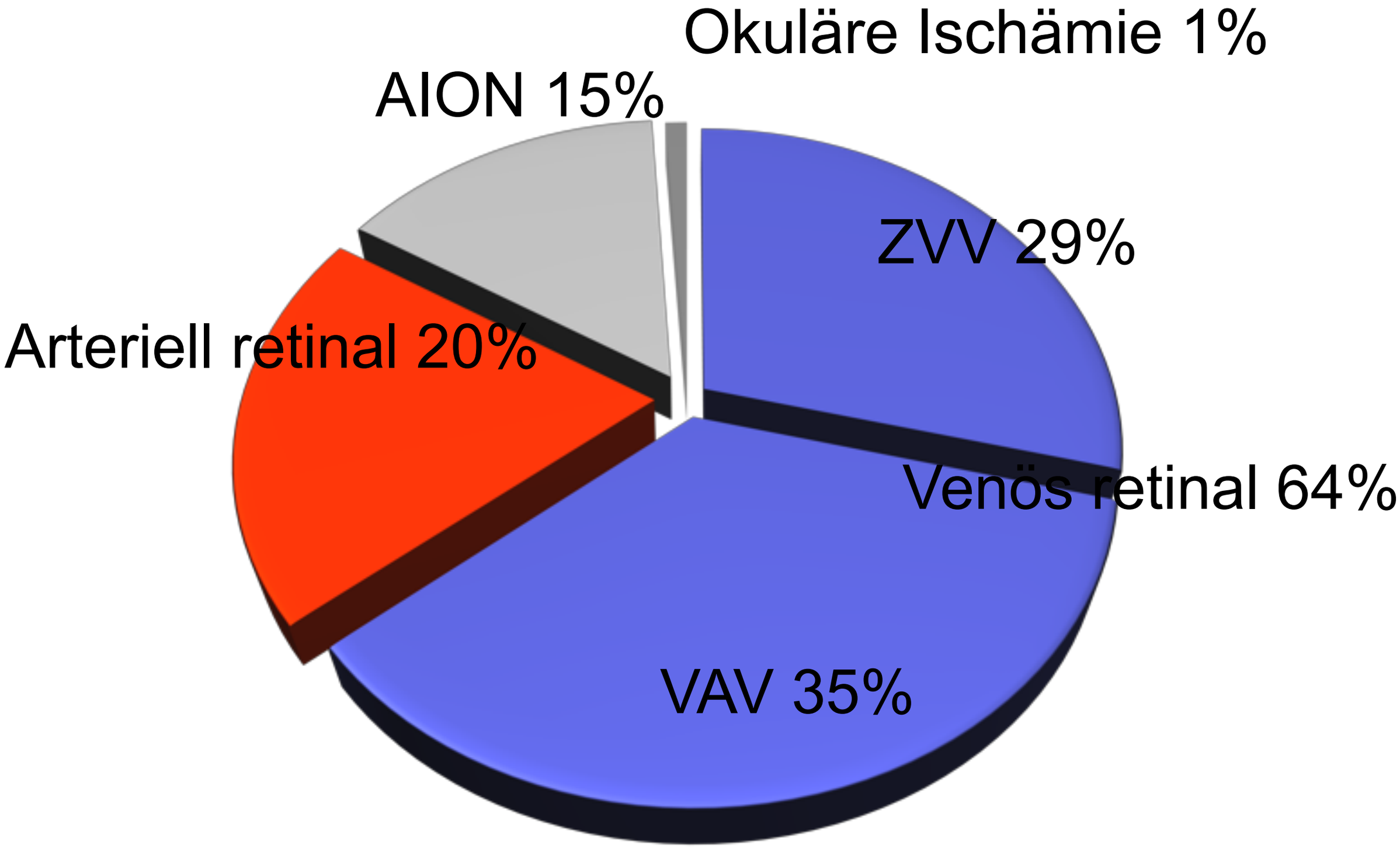
Augenklinik des
Klinikums Ludwigshafen

AAD 2019

Die “Basics“

Diagnostik & Risikofaktorabklärung

„Durchblutungsstörungen“ des Auges



Warum welche Diagnostik bei RVO?

- Visus
- Tensio, ggf. Tagesprofil
- VAA
- Funduskopie
- OCT
- Fluoreszenzangiografie (ggf. im Verlauf)
- Abklärung systemischer Risikofaktoren

Differentialdiagnose ZVV: Okuläre Ischämie !

Kein (rascher) Visusverlust
Fleckige Blutungen

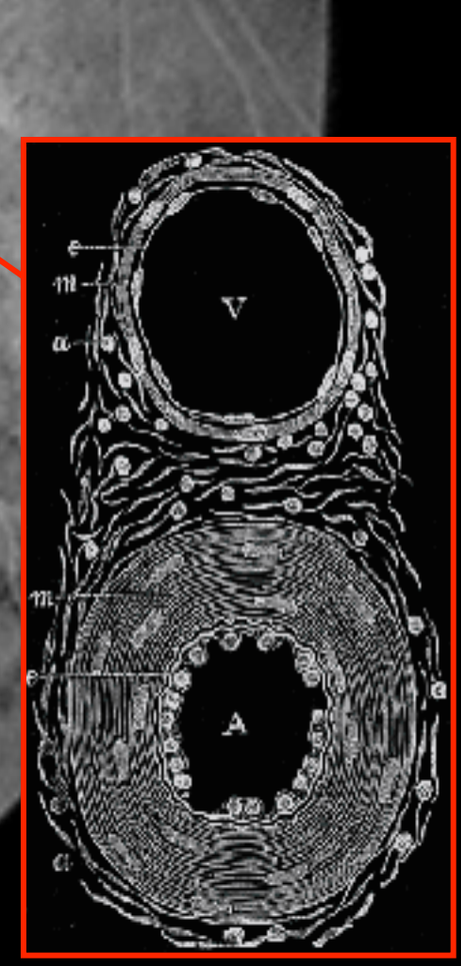
Differentialdiagnose ZVV:
„Bild ZVV“ bei systemischen Erkrankungen

DD: Infektiöse Genese (Borreliose!), Anämien

Insbesondere junge Patienten
ohne erkennbare Risikofaktoren !

Prädilektionsstelle VAV: AV-Kreuzungen (>99%)

Blutströmungsverlangsamung
Endothelschädigung
Gerinnungsneigung



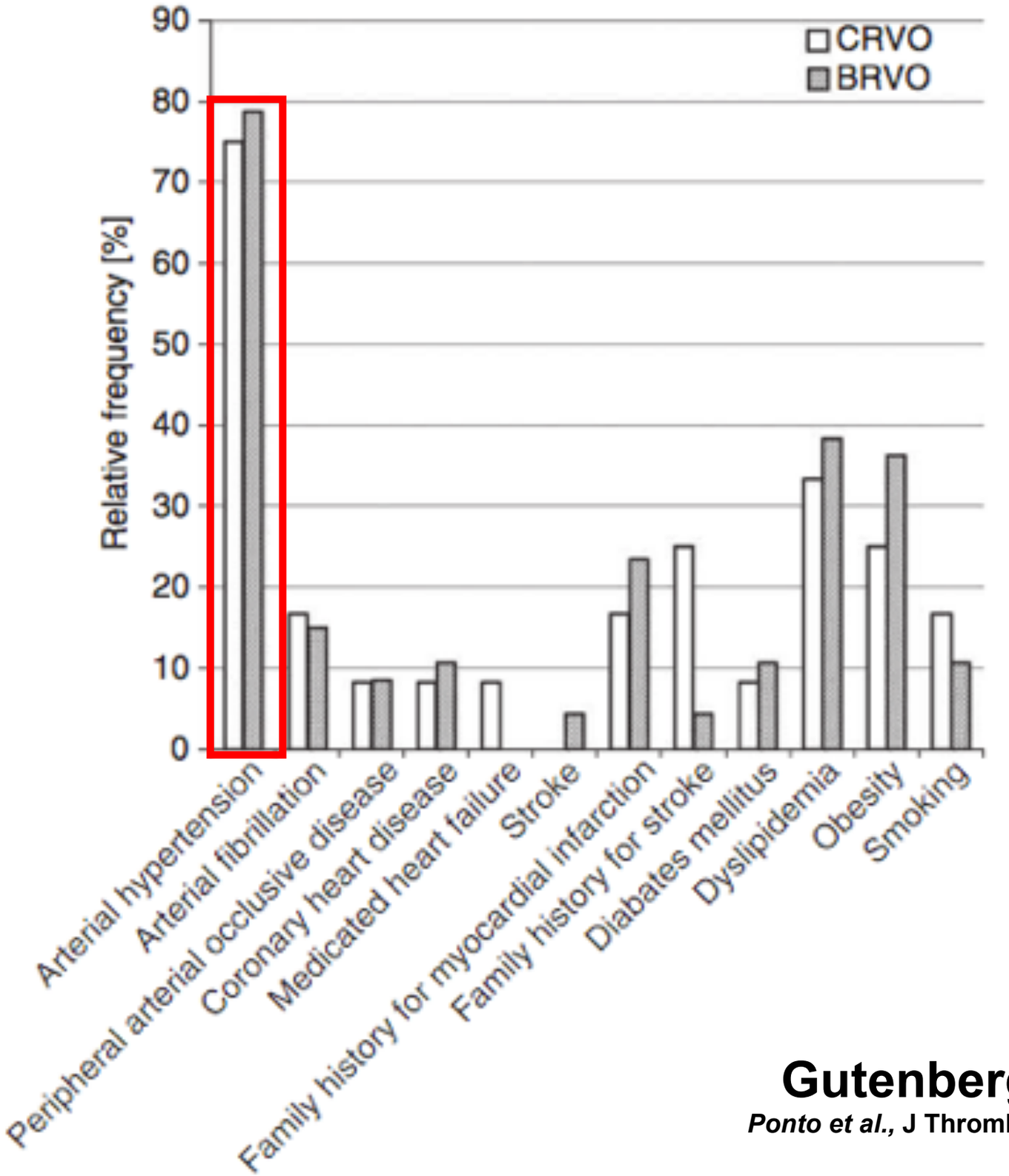
Arterielle Hypertonie

1'34''

Risikofaktor Nr. 1: Arterielle Hypertonie

ZVV: 75%

VAV: 78,7%



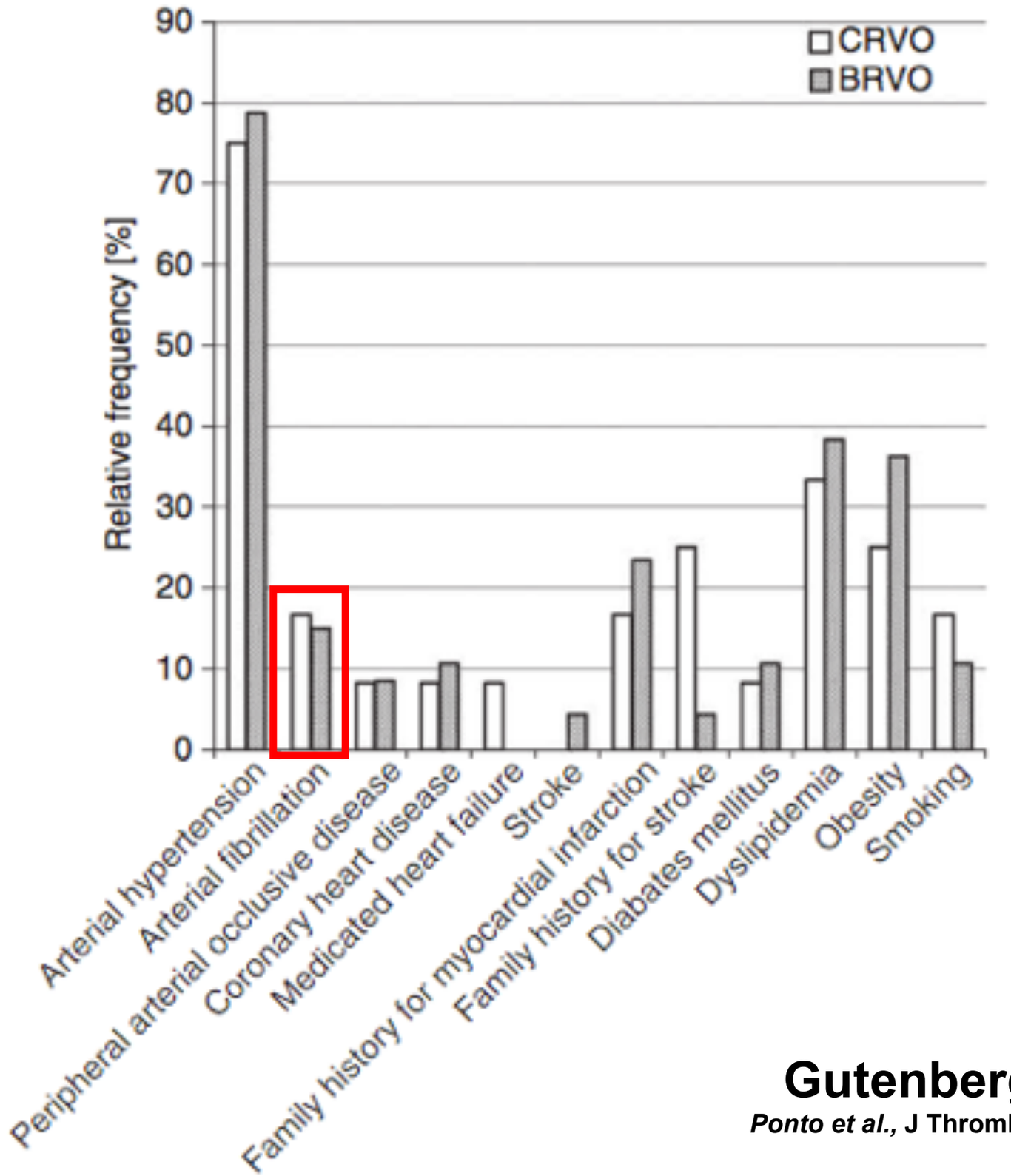
Gutenberg Health Study

Ponto et al., **J Thromb. Haemost. 2015;13:1254-1263**

Nicht nur bei RAO: Vorhofflimmern bei RVV (!)

ZVV: 16,7%

VAV 14,9%



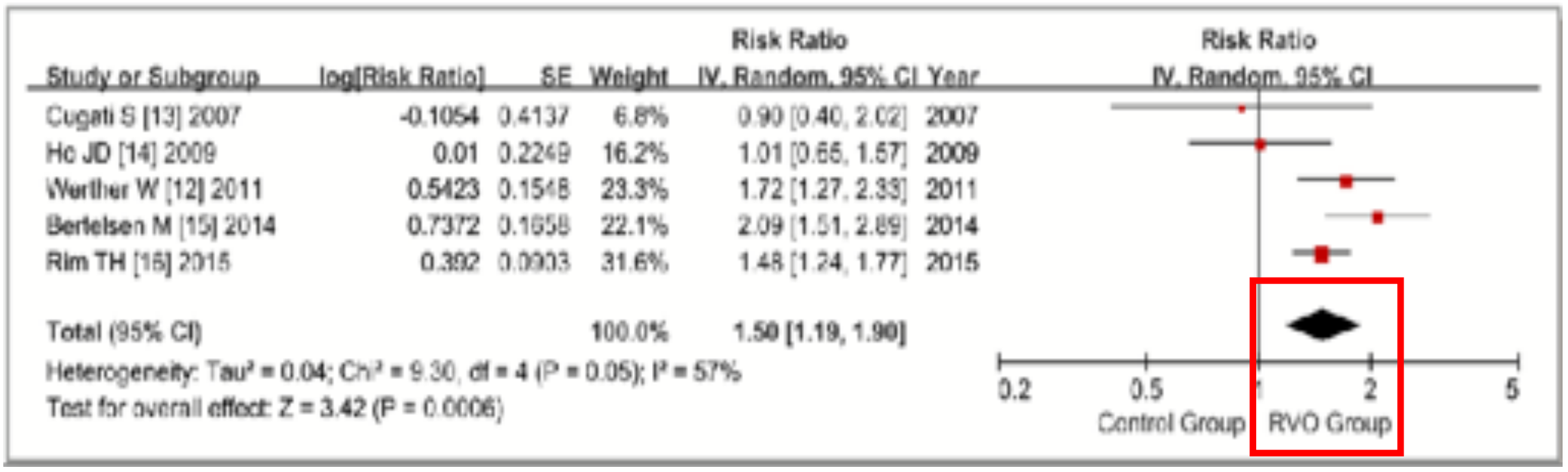
Gutenberg Health Study

Ponto et al., **J Thromb. Haemost. 2015;13:1254-1263**

Erhöhtes Schlaganfallrisiko nach RVV

***Li et al.,* J Am Heart Assoc. 2016**

- **Metaanalyse, 5 Studien**
- **37.471 RVV-Patienten, davon n=431 Schlaganfall**
- **Relatives Risiko: 1,5**



Vorhofflimmern: Frühzeitige Diagnostik wichtig für Schlaganfallprophylaxe!

- Rivaroxaban *Xarelto*
- Apixaban *Eliquis*
- Edoxaban *Lixiana*

50% Reduktion hämorrhagischer Schlaganfall durch Direkte Orale Antikoagulanzien (DOAC)

DOAC: 10% weniger Gesamtletalität

Meta-Analyse Ruff CT et al. Lancet 2014;383:955-62

Risikofaktor Hämatologische Erkrankungen (“Rheologischer Ansatz“)

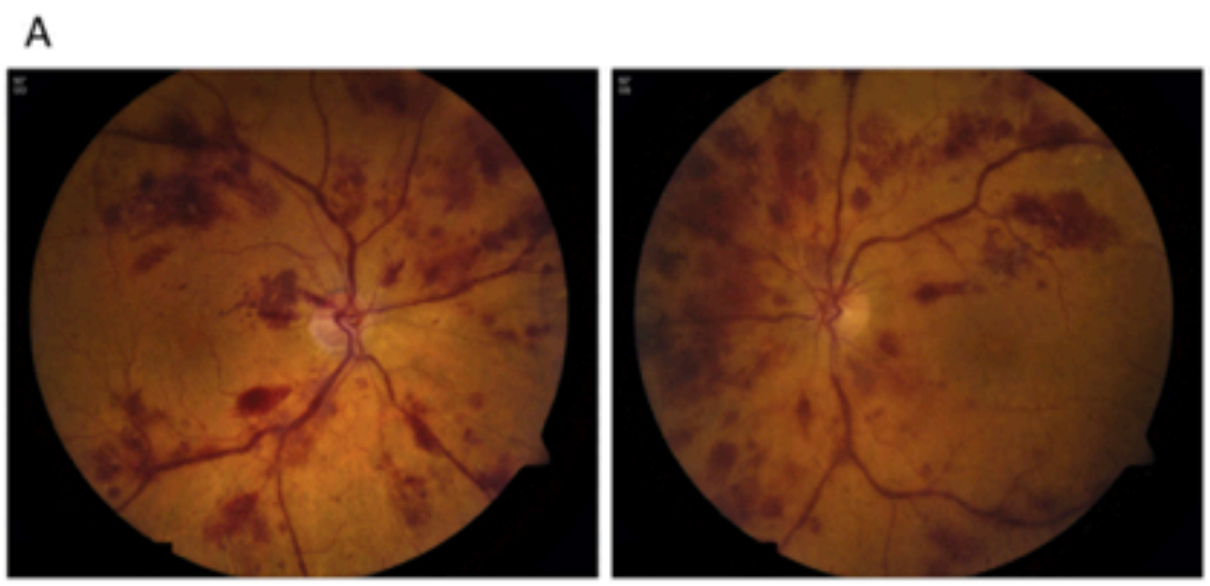
♀, 72 J., Thrombozytose (>800.000), Leukozytose

Case report

Bilateral simultaneous central retinal vein occlusion in hyperviscosity retinopathy treated with systemic immunosuppressive therapy only

Michal Blau-Most[a,b], Raz Gepstein[a,b], Alexander Rubowitz[a,b,*]

[a] Department of Ophthalmology, Meir Medical Center, Kfar Sava, Israel
[b] Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel



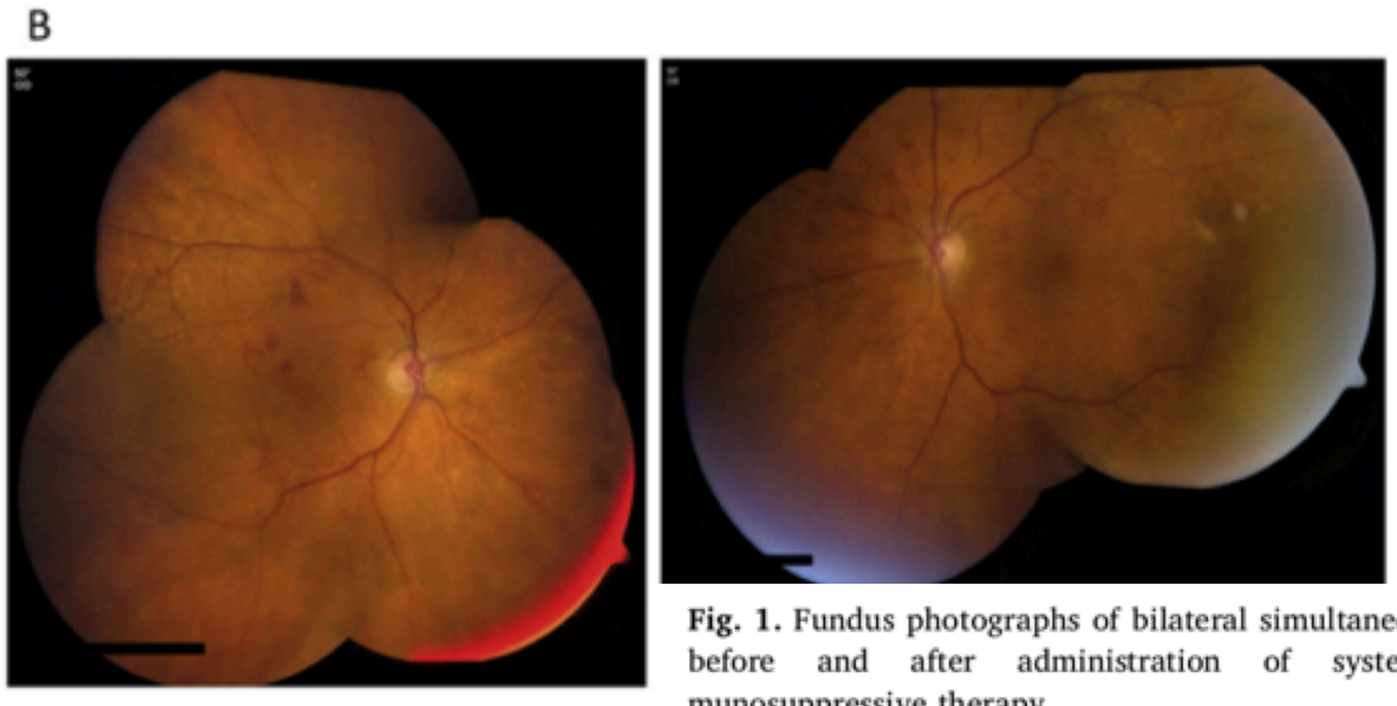
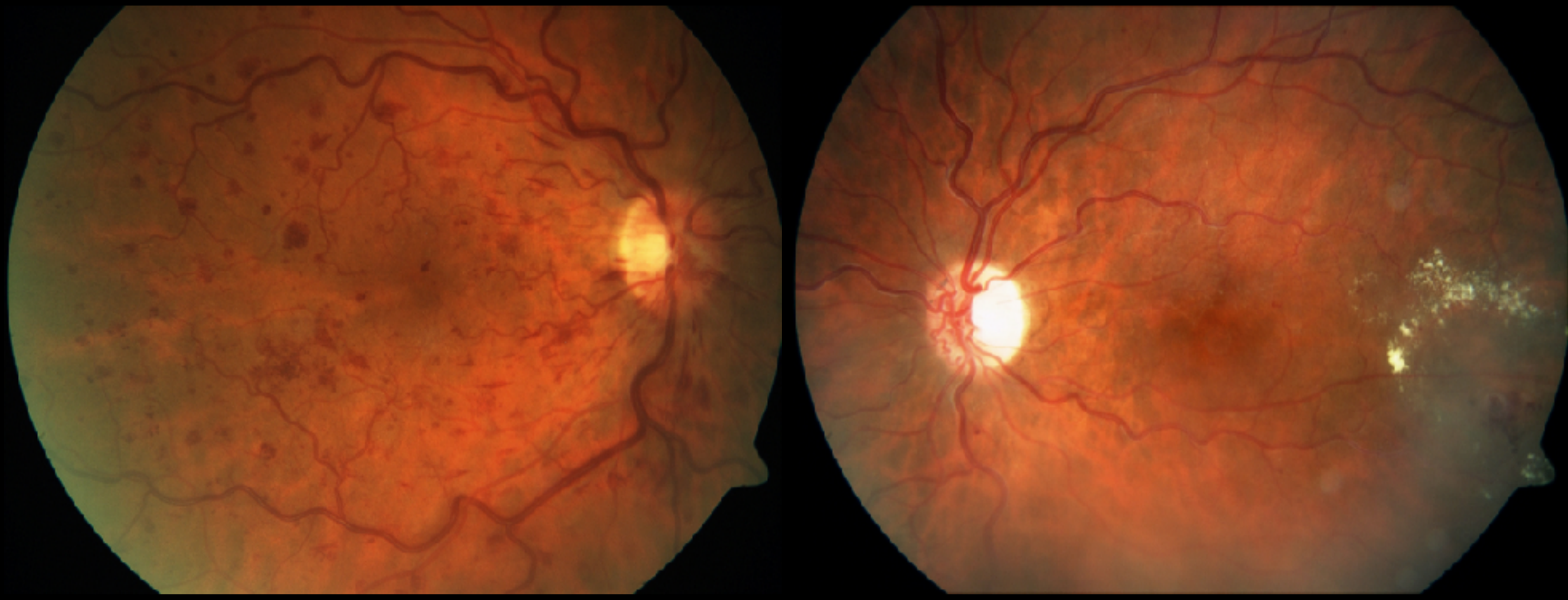


Fig. 1. Fundus photographs of bilateral simultaneous CRVO before and after administration of systemic immunosuppressive therapy.

87 J., makrozytäre Anämie (Hb 7.5 g/dL), Thrombozytopenie (74,000/µL), monoklonales IGM, IgM erhöht (6610 mg/dL)

„Thrombophilie“



♂, 71 J., m., rezidivierende ZVV seit 2007
Erhöhte Lipoprotein(a)-Spiegel und heterozygote Mutation im Gen für Apolipoprotein A = Risikofaktor Arteriosklerose (KHK, Apoplex)

Klinische Studie

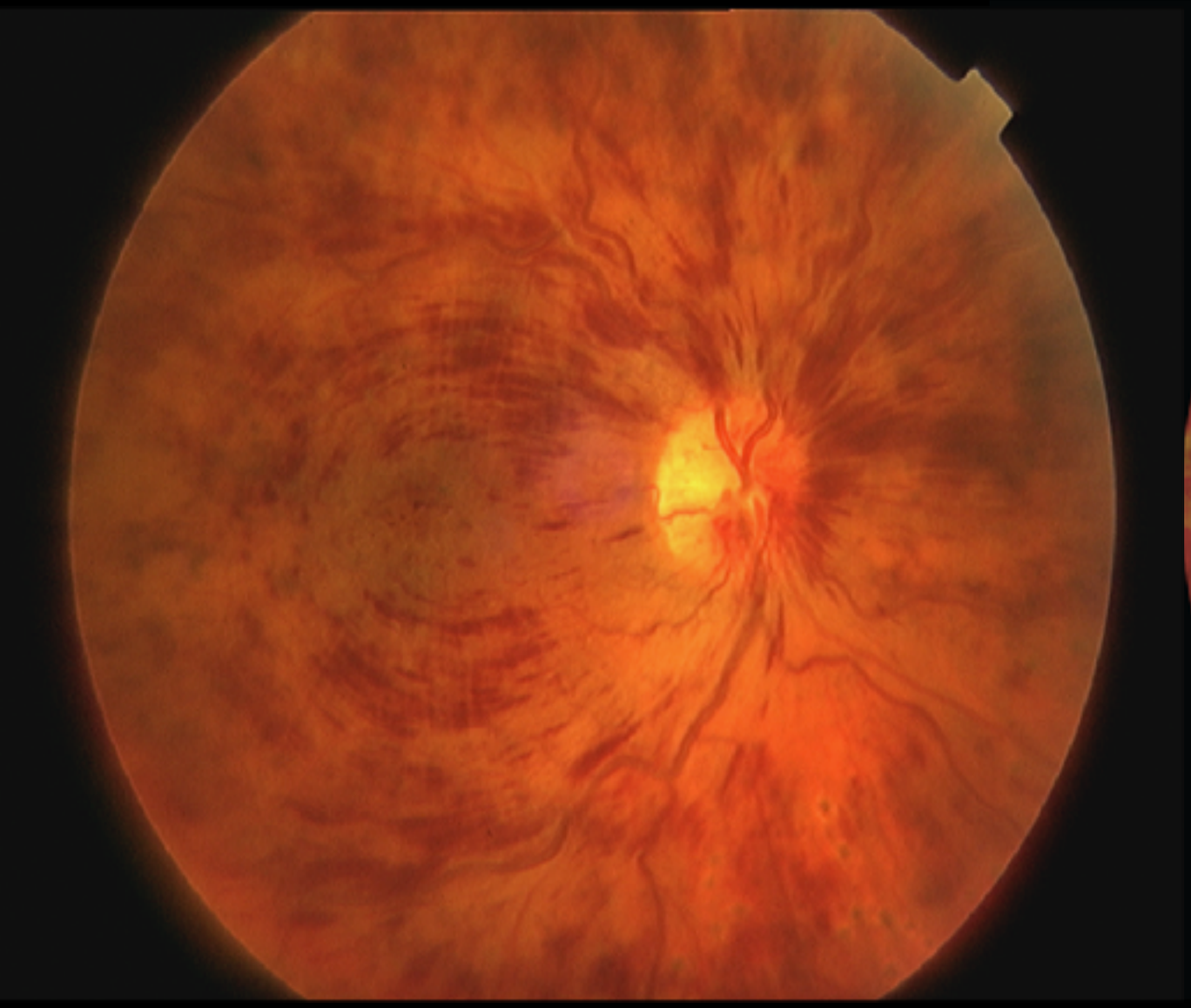
Prävalenz erhöhter Lipoprotein(a)-Spiegel bei unter 60-jährigen Patienten mit venösen retinalen Gefäßverschlüssen

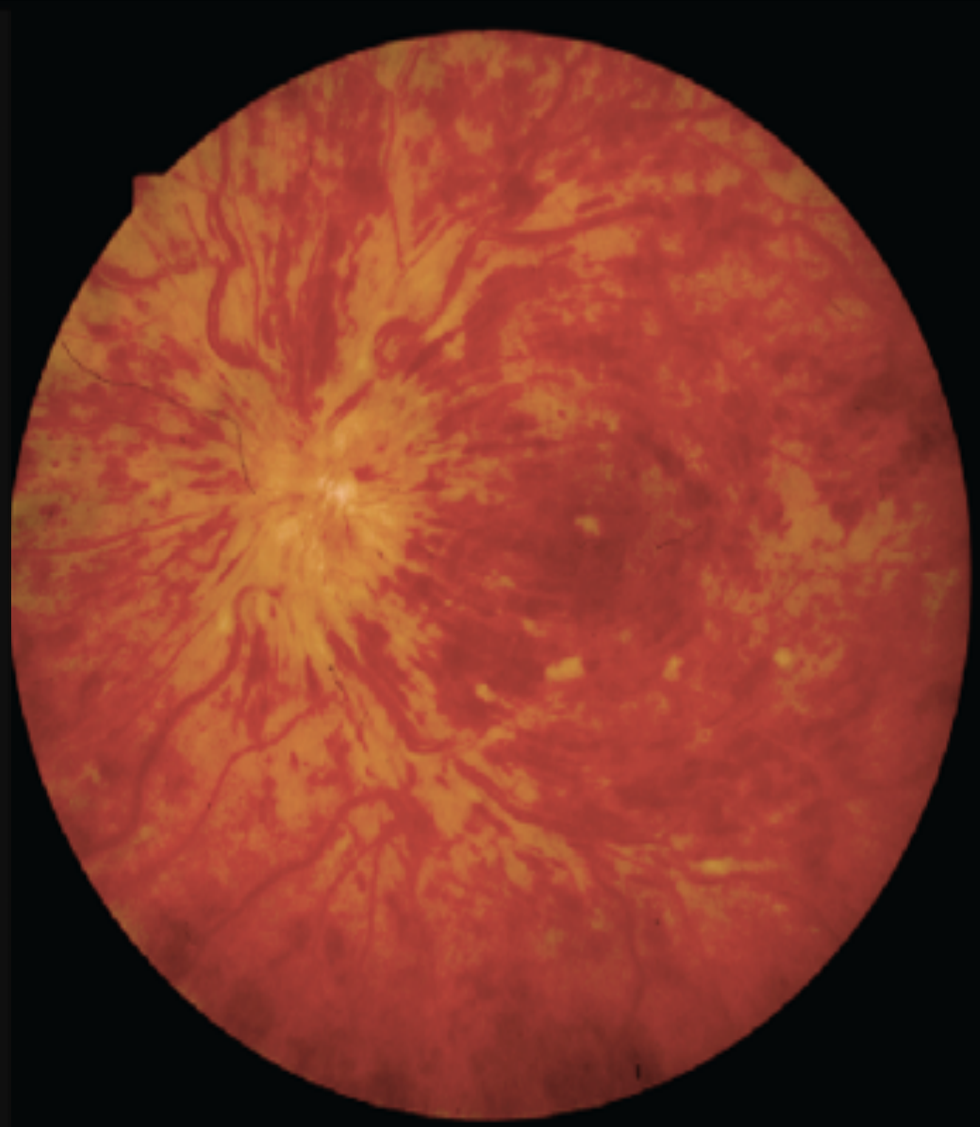
Prevalence of Elevated Lipoprotein (a) Levels in Patients < 60 Years of Age with Retinal Vein Occlusion

Autoren: C. Kuhli-Hattenbach[1], P. Hohbern[2], W. Miesbach[3], T. Kohnen[1], L.-O. Hattenbach[4]

Institute:
[1] Klinik für Augenheilkunde, Klinikum der Johann Wolfgang Goethe-Universität Frankfurt
[2] Institut für Hämostaseologie und Transfusionsmedizin, Klinikum der Stadt Ludwigshafen gGmbH
[3] Medizinische Klinik II/Institut für Transfusionsmedizin und Immunhämatologie, Klinikum der Johann Wolfgang Goethe-Universität Frankfurt
[4] Augenklinik, Klinikum der Stadt Ludwigshafen gGmbH

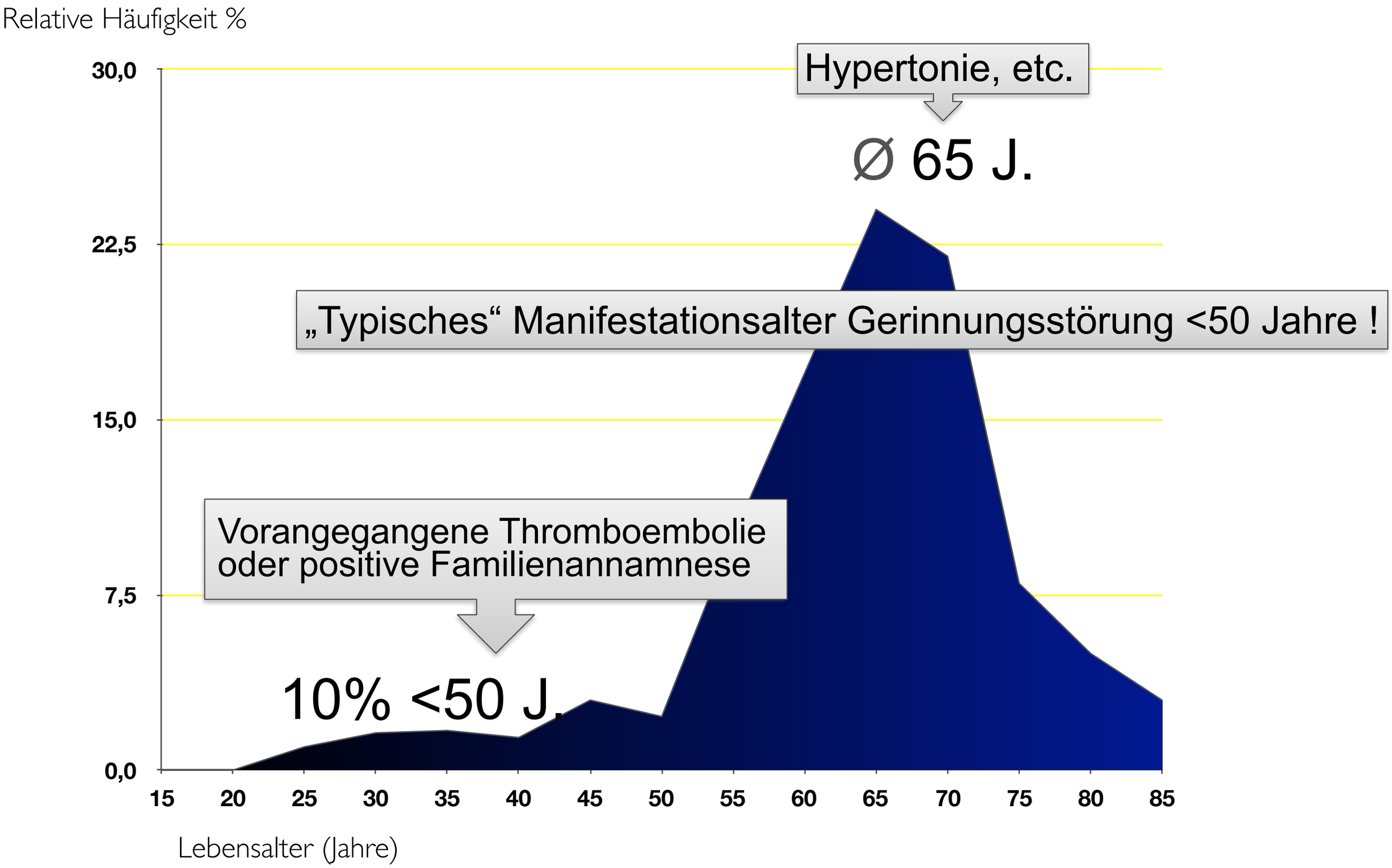
Thrombophilie = systemisches Risiko!





♂, 47 J., beidseitiger ZVV innerhalb von 2 Jahren,
Z.n. BVT im Alter von 33 Jahren: *Homozygote **APC-Resistenz***
(50fach erhöhtes Thromboserisiko !)

Thrombophiliescreening = Spezialdiagnostik!



Kuhli-Hattenbach C, Scharrer I, Lüchtenberg M, Hattenbach LO. Coagulation disorders and the risk of retinal vein occlusion. ***Thromb Haemost*** 2010;103:299-305.

Allgemeindiagnostische Abklärung bei RVO

Obligat:

- Ausschluß / Einstellung Arterielle Hypertonie (RR, Langzeit-RR)
- EKG, Langzeit-EKG (ggf. Schlaganfallprophylaxe!)
- Auschluß Diabetes mellitus

Bei begründetem Verdacht:

Farbduplex-Sonografie hirnversorgende Gefäße (DD Ischämiesyndrom)

Echokardiografie

Spezielle Diagnostik
BB, Diff.-BB (hämatologische Erkrankungen)
Thrombophilie-Screening
Ausschluß entzündlicher Ursachen (Serologie)

Die “morphologische“ Diagnostik:

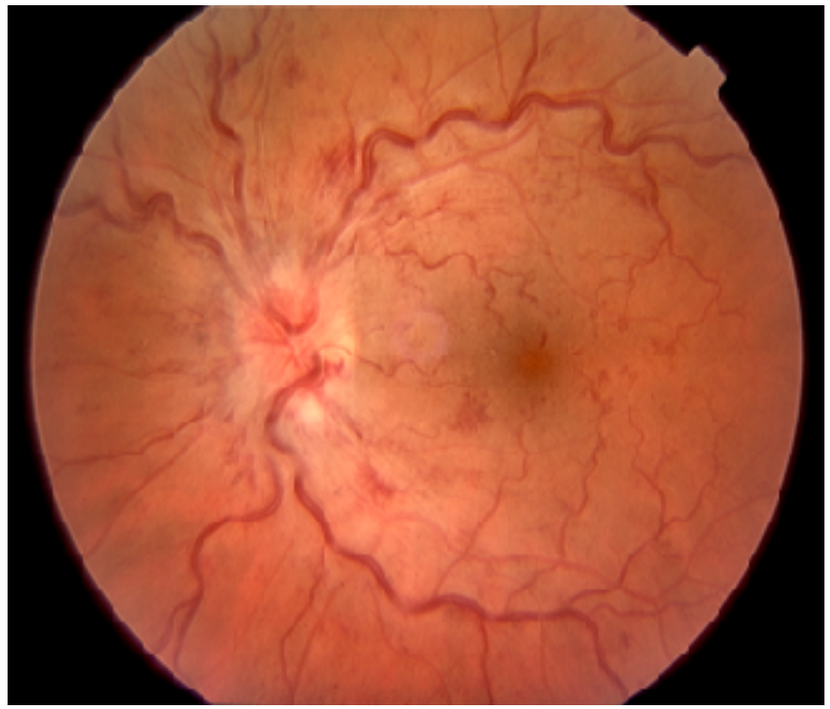
Prognostische Bedeutung

und

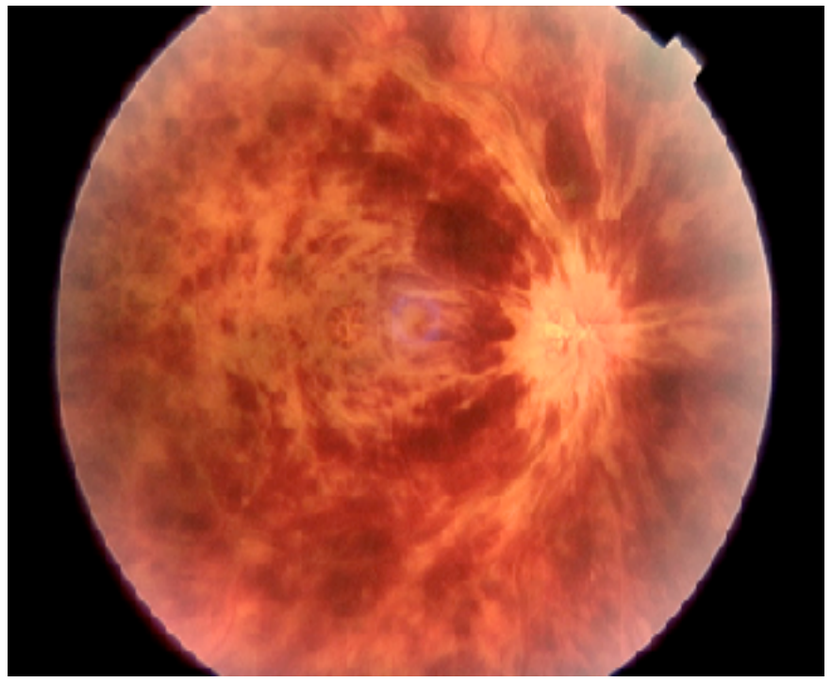
Vorhersagbarkeit

Diagnostik RVO:
Einteilung nach Schweregrad (Hayreh 1983)

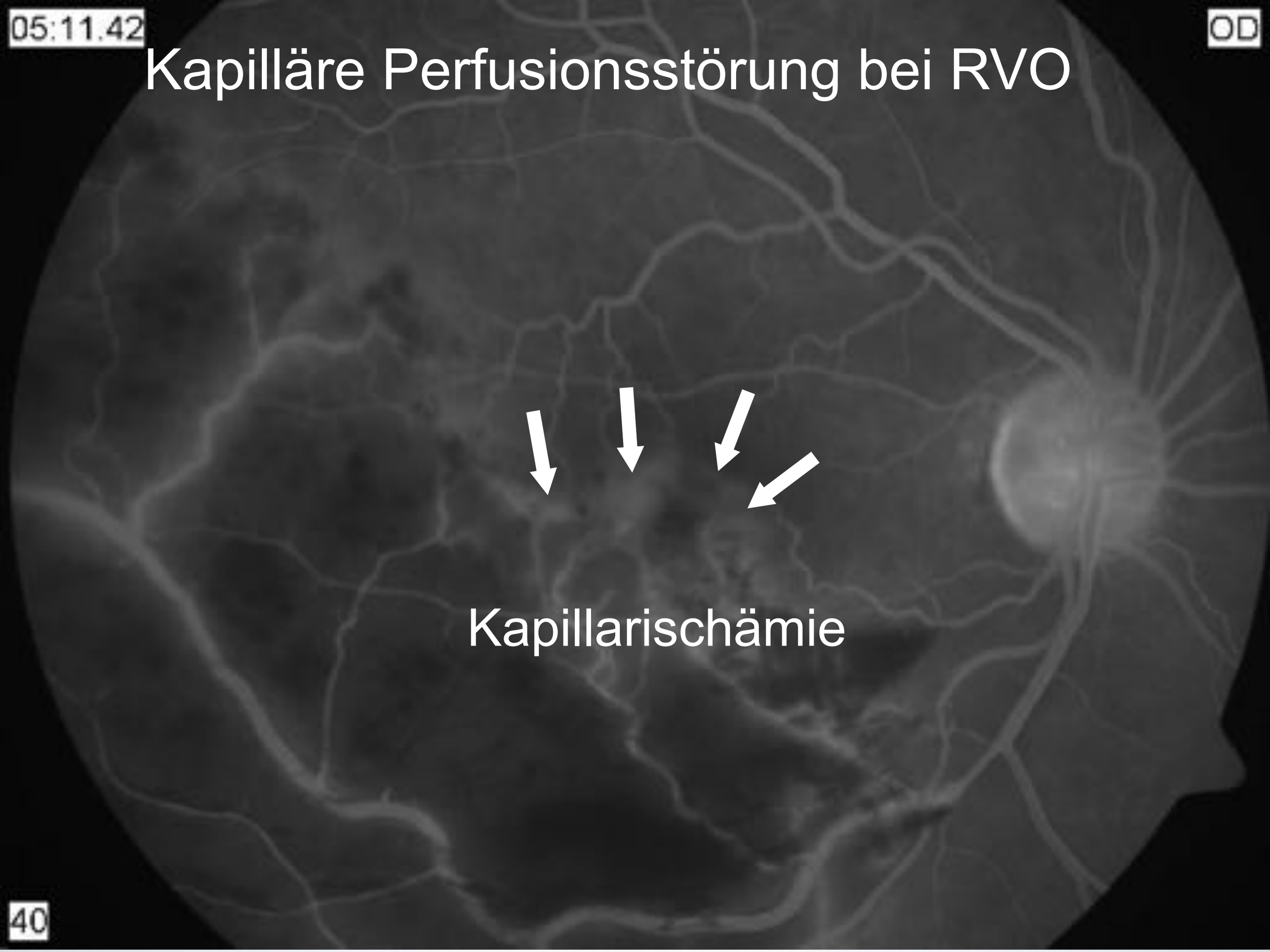
Nicht-ischämischer ZVV
(„Venöse-Stase Retinopathie“)



Ischämischer ZVV
(„Hämorrhagische Retinopathie“)

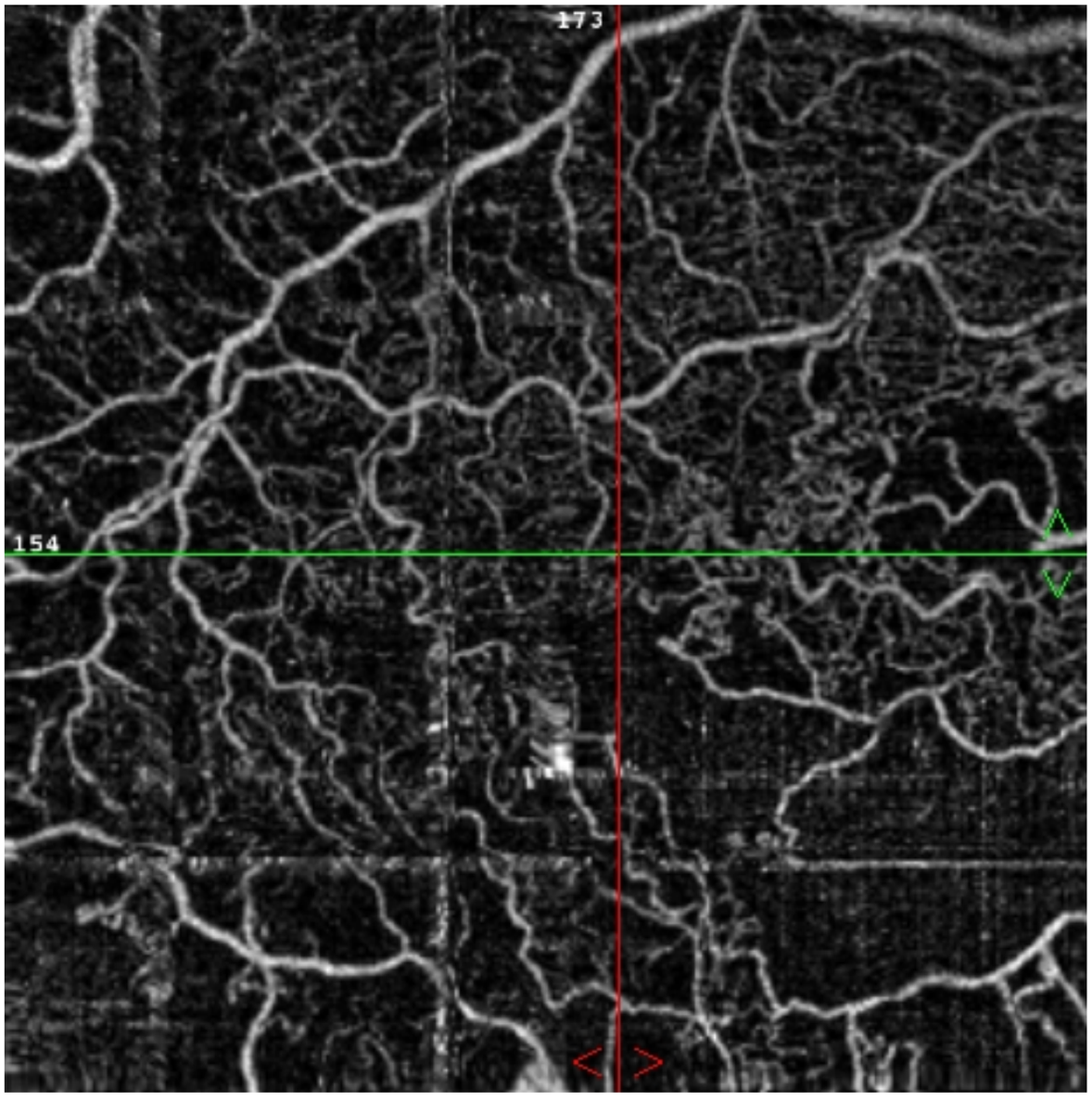


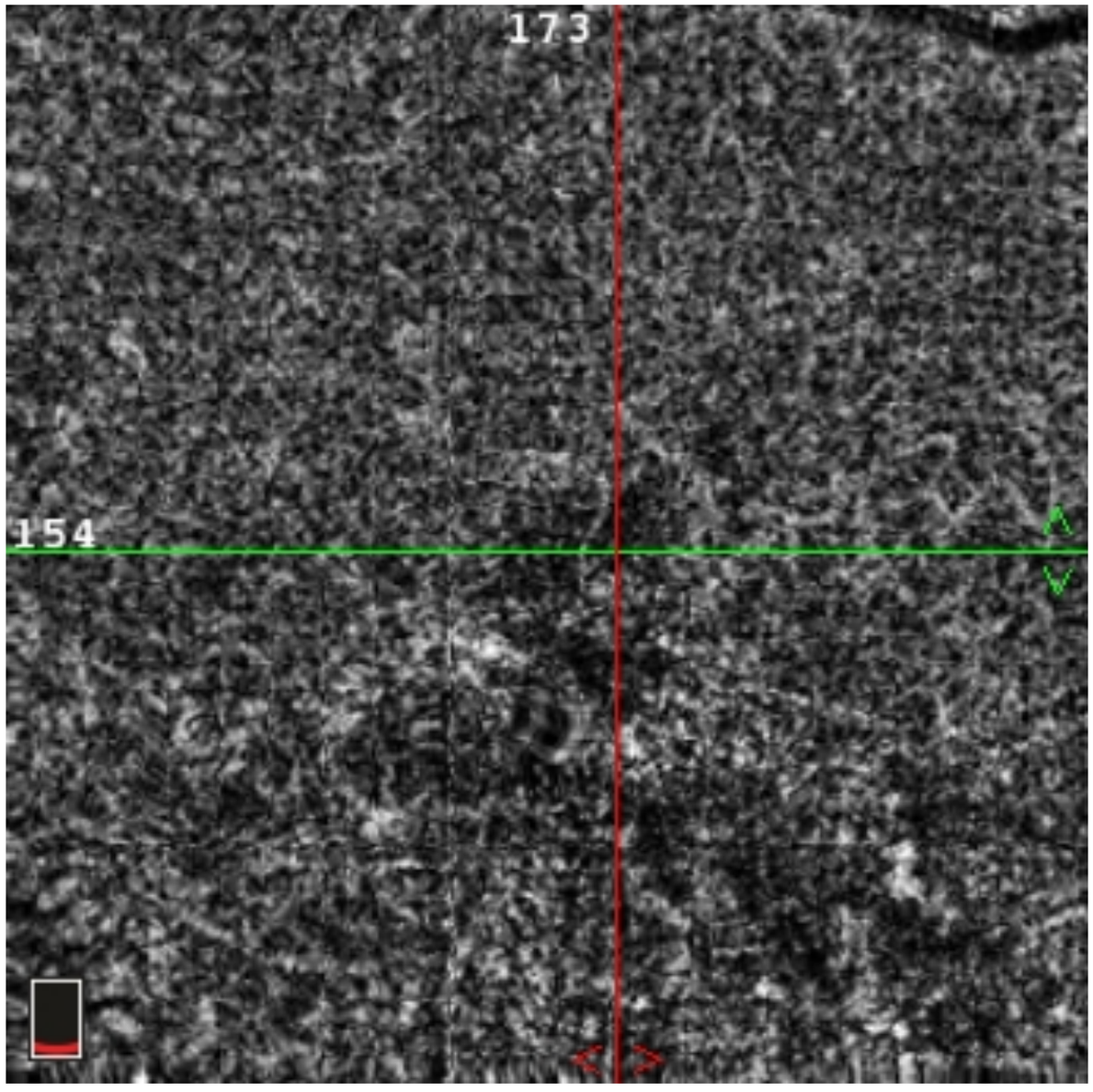
Kapilläre Perfusionsstörung bei RVO



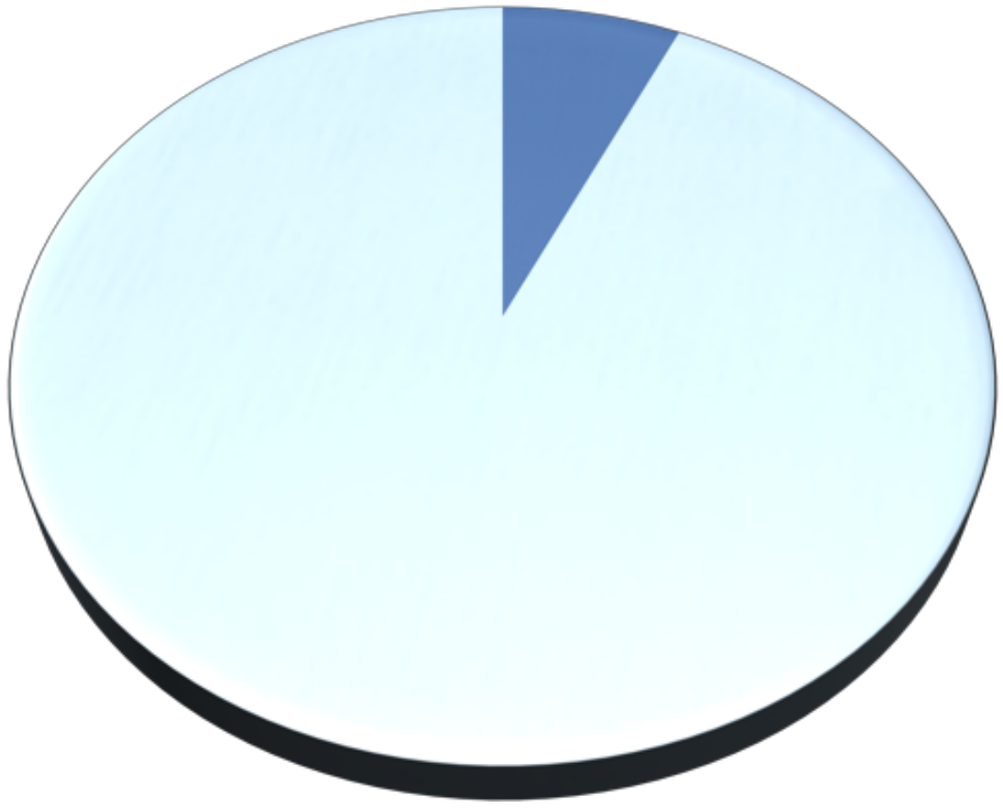
Kapillarischämie

OCT-Angiografie: Perfusionsausfall bei VAV

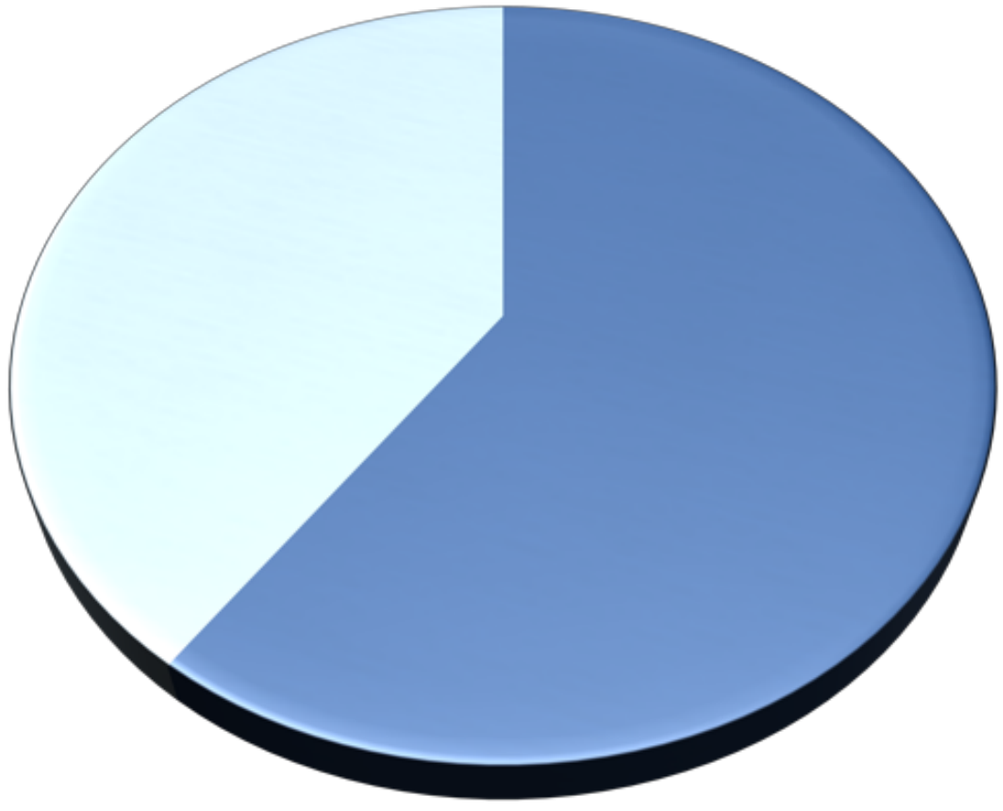




RVV: Zusammenhang Ischämiegrad und Visusprognose

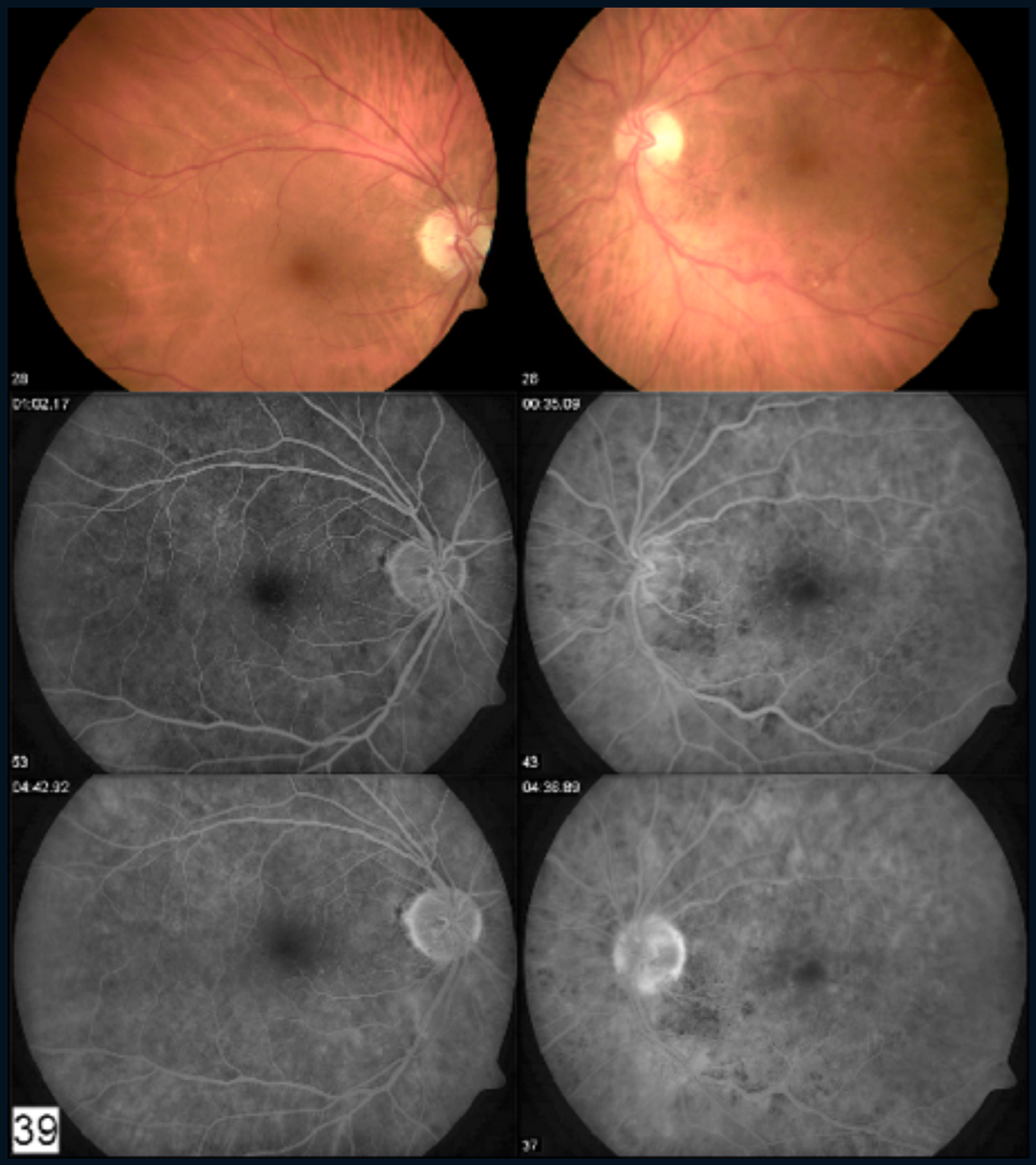


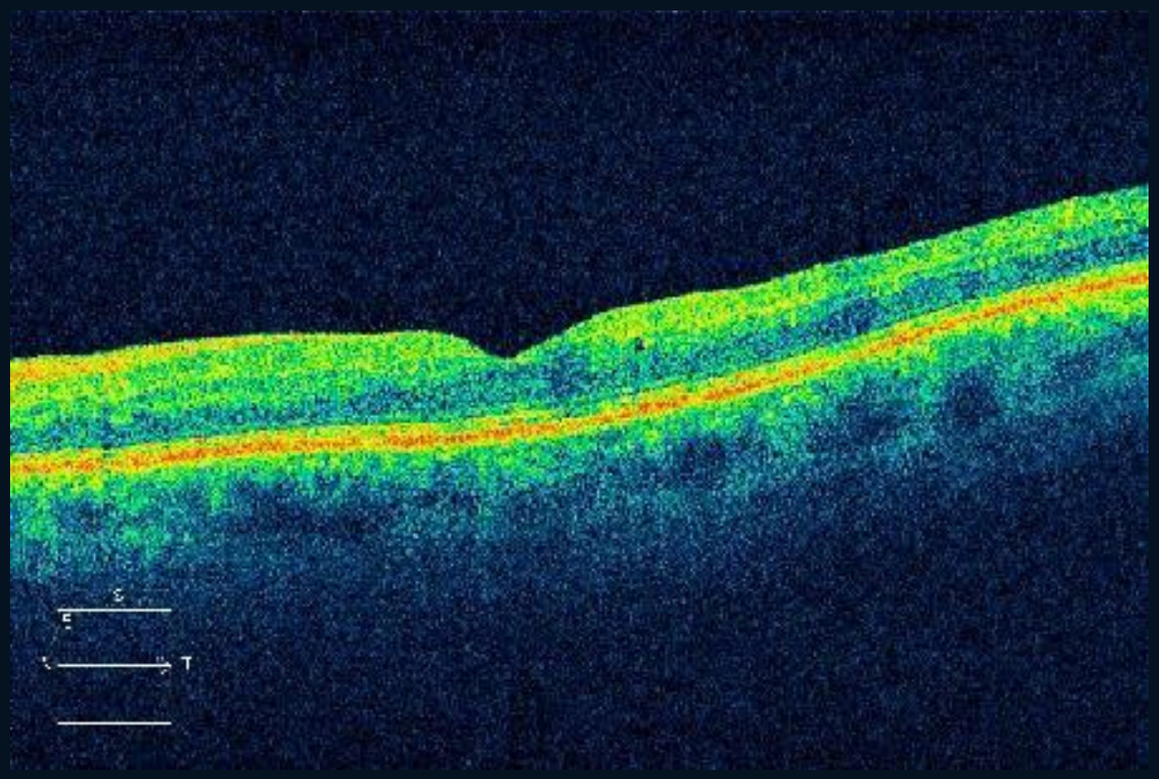
Ischämischer ZVV: 93% <0,1



VAV: 50-60% ≥0,5

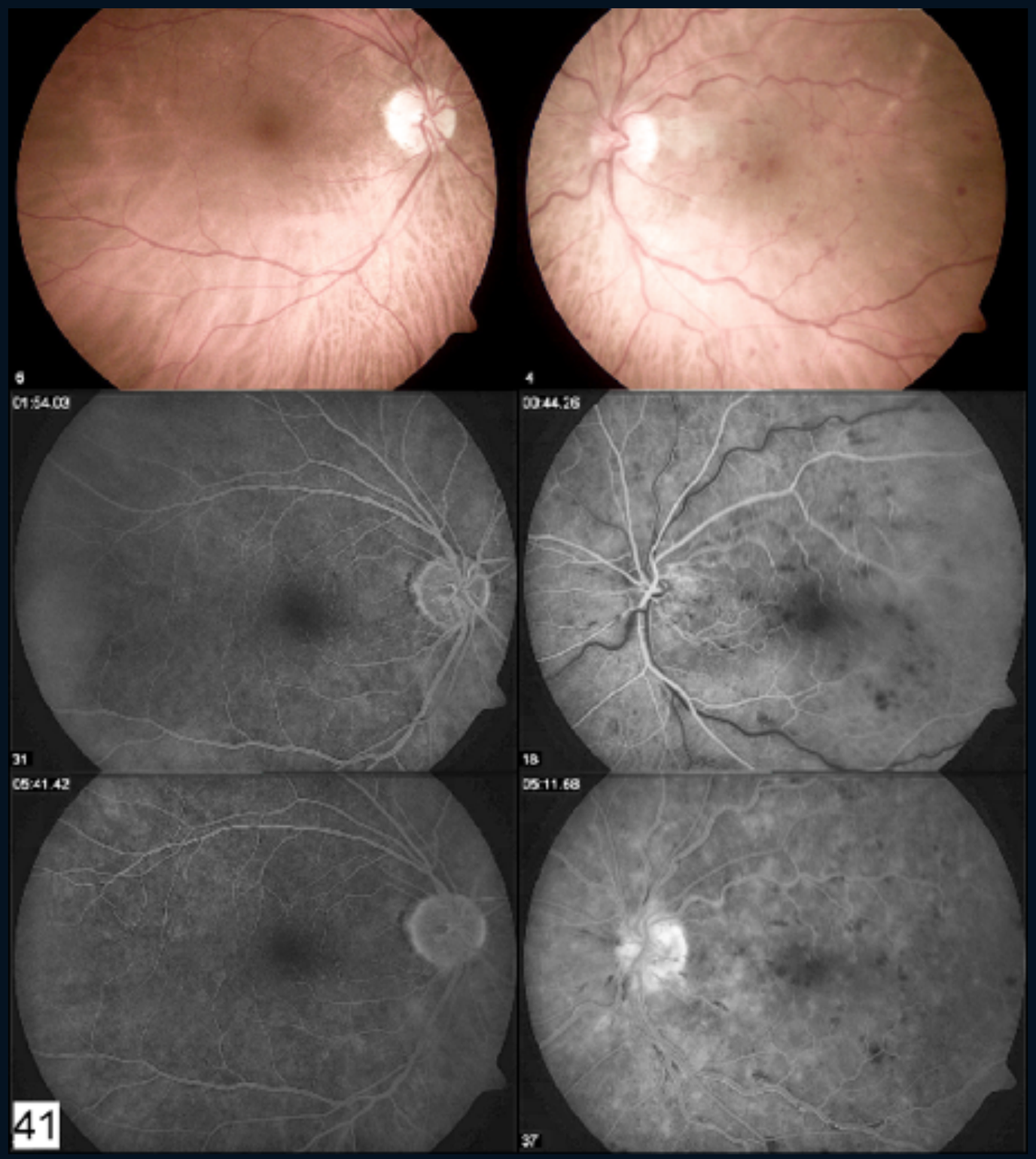
Cave Langzeitverlauf !



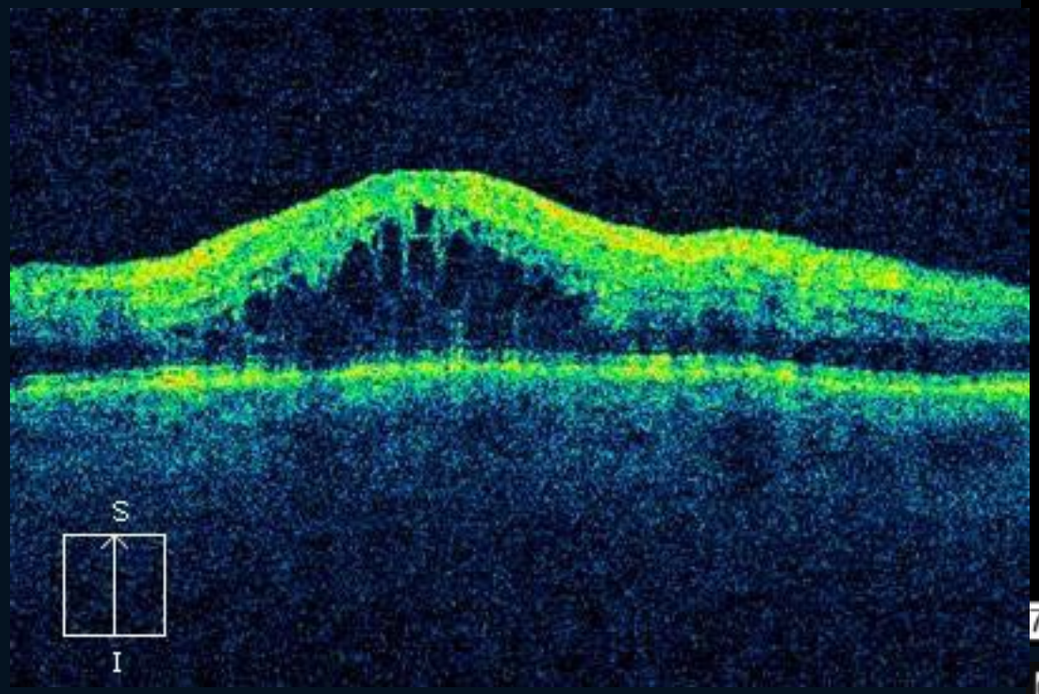


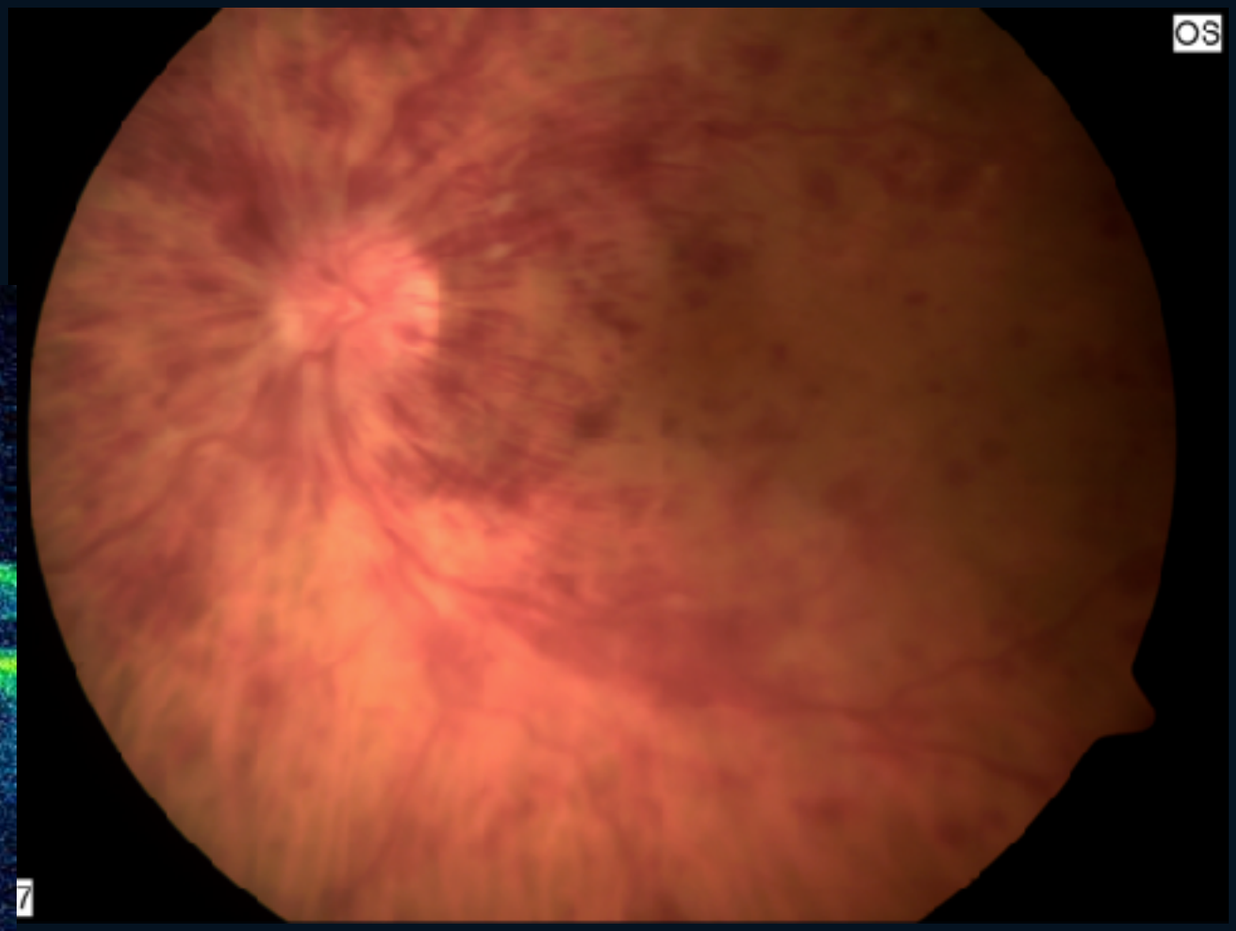
Initialer Befund ZVV LA, Visus 1,0, Therapie: Beobachtung

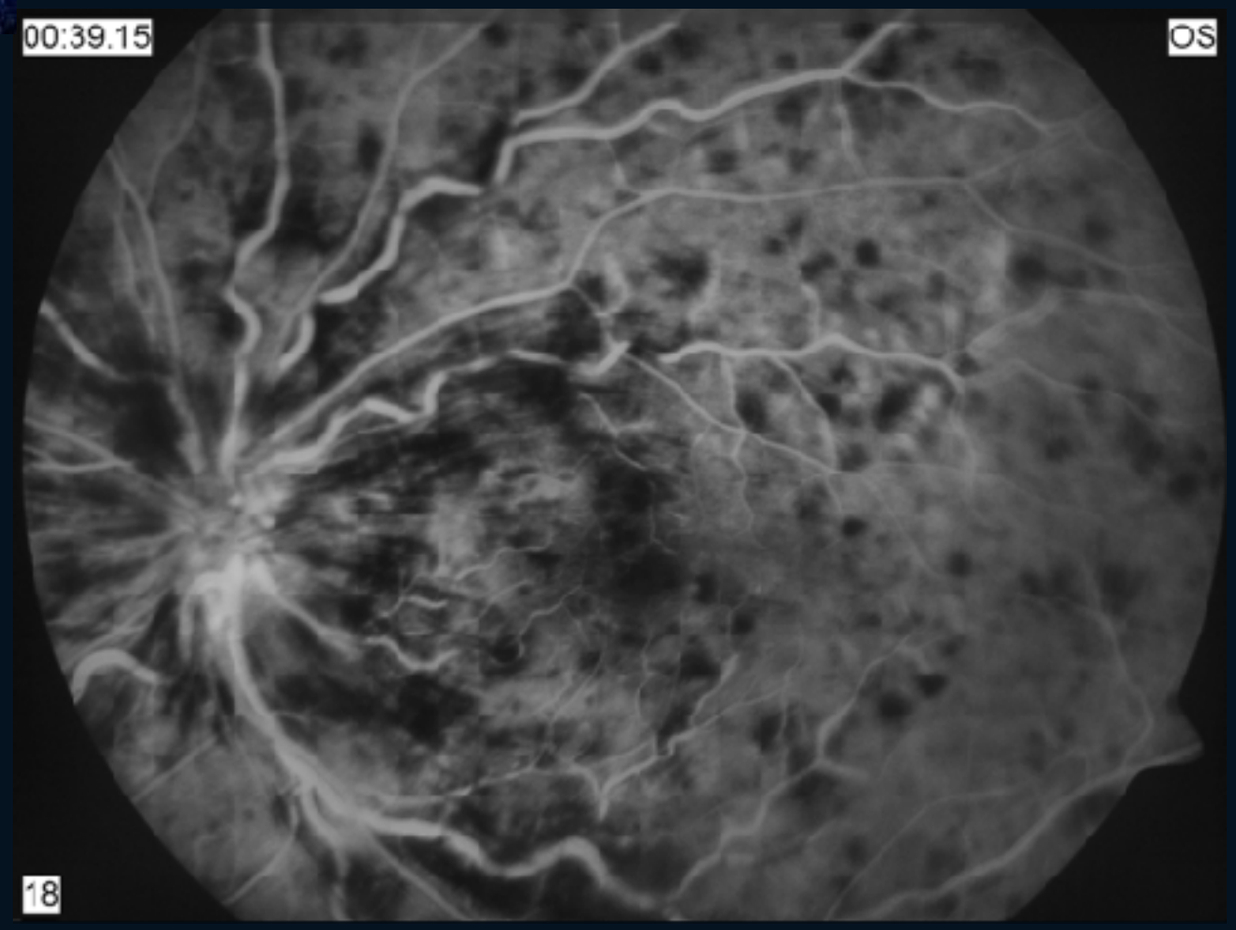
Befund nach 5 Monaten



Befund nach 8 Monaten

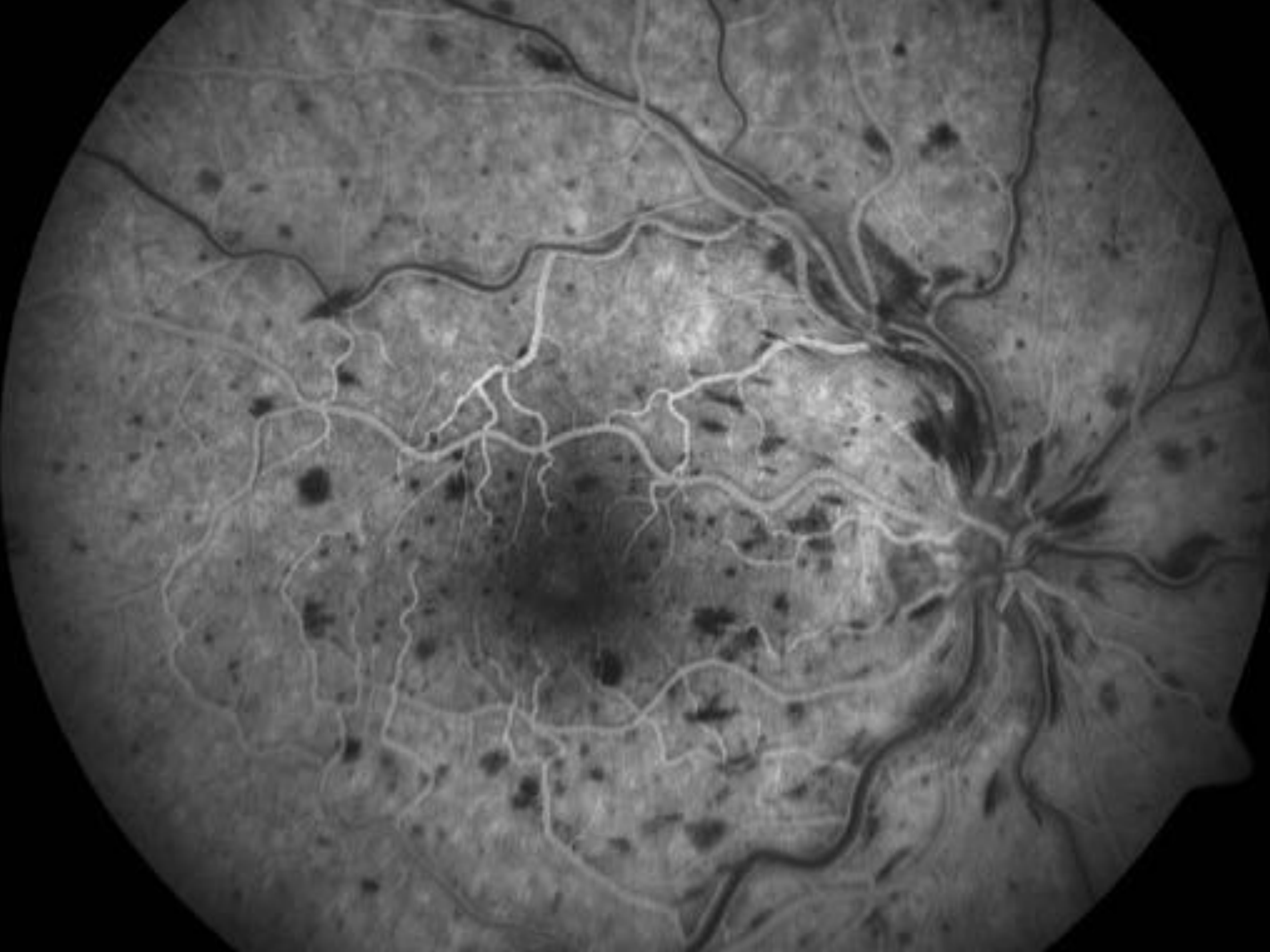


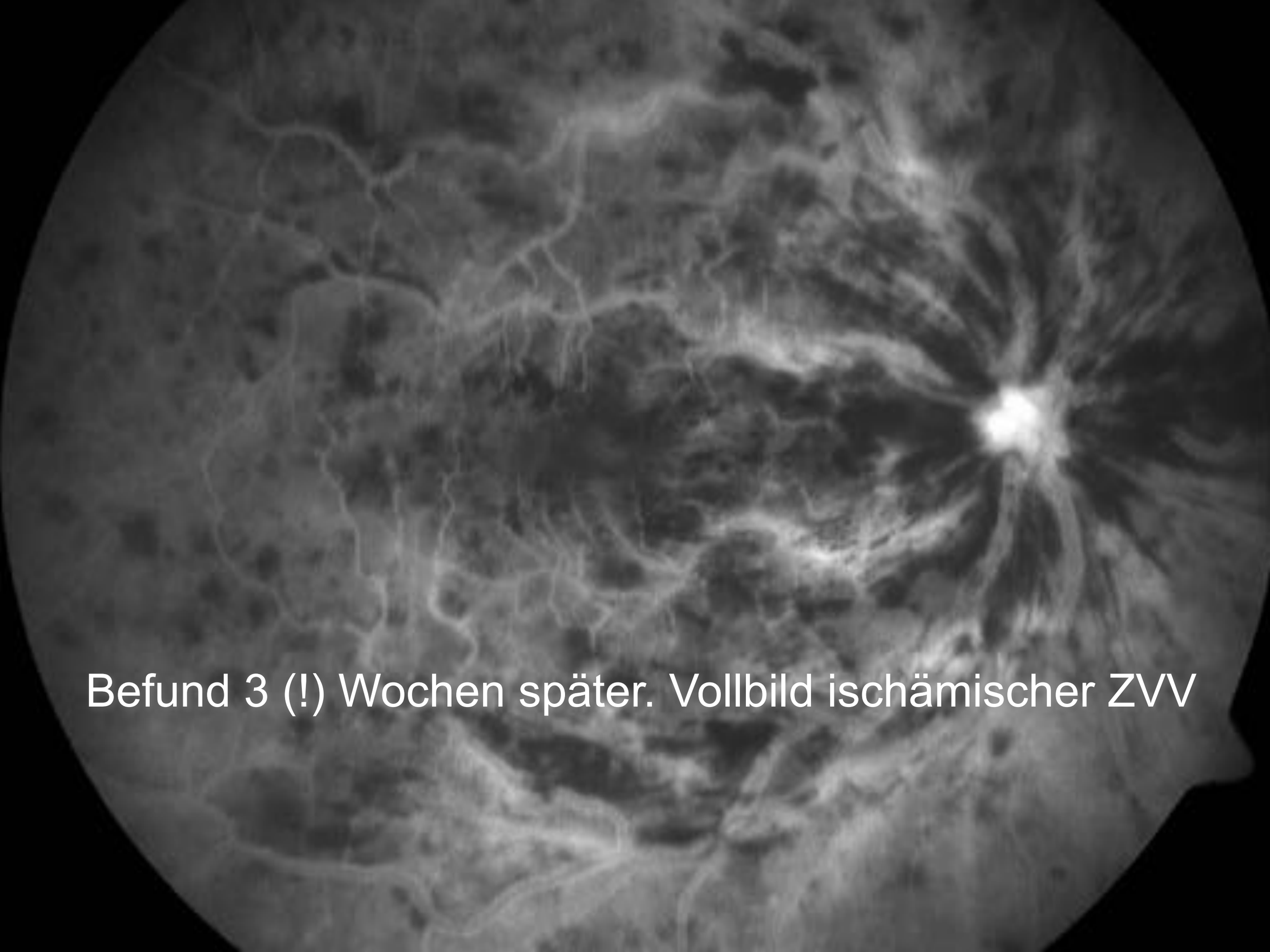




Cave schnelle Konversion!

Nicht-ischämischer ZVV





Befund 3 (!) Wochen später. Vollbild ischämischer ZVV

Nicht-ISCHÄMISCHER
ZVV

20-30%

ISCHÄMISCHER
ZVV

ASSOCIATION BETWEEN RETINAL HEMORRHAGIC PATTERNS AND PERFUSION STATUS IN EYES WITH ACUTE CENTRAL RETINAL VEIN OCCLUSION

YUKI MURAOKA, MD, PhD,* AKIHITO UJI, MD, PhD,* AKITAKA TSUJIKAWA, MD, PhD,† TOMOAKI MURAKAMI, MD, PhD,* SOTARO OOTO, MD, PhD,* KIYOSHI SUZUMA, MD, PhD,* AYAKO TAKAHASHI, MD,* YUTO IIDA, MD,* YUKO MIWA, MD,* MASAYUKI HATA, MD,* NAGAHISA YOSHIMURA, MD, PhD*

Purpose: To evaluate peripheral retinal hemorrhagic patterns in eyes with acute central retinal vein occlusion, and to explore their clinical relevance in differentiating for the retinal perfusion status, through a prospective, and cross-sectional study.

Methods: Fifty eyes with acute central retinal vein occlusion were included. Retinal hemorrhagic patterns at the equator and retinal perfusion status were evaluated by ultra-wide field fundus photography and fluorescein angiography.

Results: Retinal perfusion was categorized as nonischemic in 29 eyes, ischemic in 18 eyes, and undeterminable in 3 eyes. None of the examined eyes had flame-shaped retinal hemorrhages in the periphery. All hemorrhages were rounded-dot or blot and were variable in size. Particle analysis was performed to quantify hemorrhage size, and showed higher values in eyes having larger blot hemorrhages, and lower values in eyes having dot or smaller blot hemorrhages. Mean size of maximum peripheral dot or blot hemorrhage was larger in eyes classified as ischemic (10,783.0 ± 5,946.3 pixels) than as nonischemic (2,839.9 ± 1,153.6 pixels, $P < 0.001$). The authors calculated area under the curve to investigate the ability of continuous variables to discriminate retinal perfusion status, which was 0.963 ($P < 0.001$) for mean size of maximum peripheral blot hemorrhages.

Conclusion: The authors objectively evaluated retinal hemorrhagic patterns at the equator in eyes with acute central retinal vein occlusion using particle analysis. The resulting hemorrhage size measurement was considered to be often useful in determining retinal perfusion status. Because they can be noninvasively evaluated with readily available equipment, peripheral hemorrhagic patterns might be good clinical markers of retinal perfusion.

RETINA 0:1–9, 2018

Ischämisches peripheres Hämorrhagie-Muster

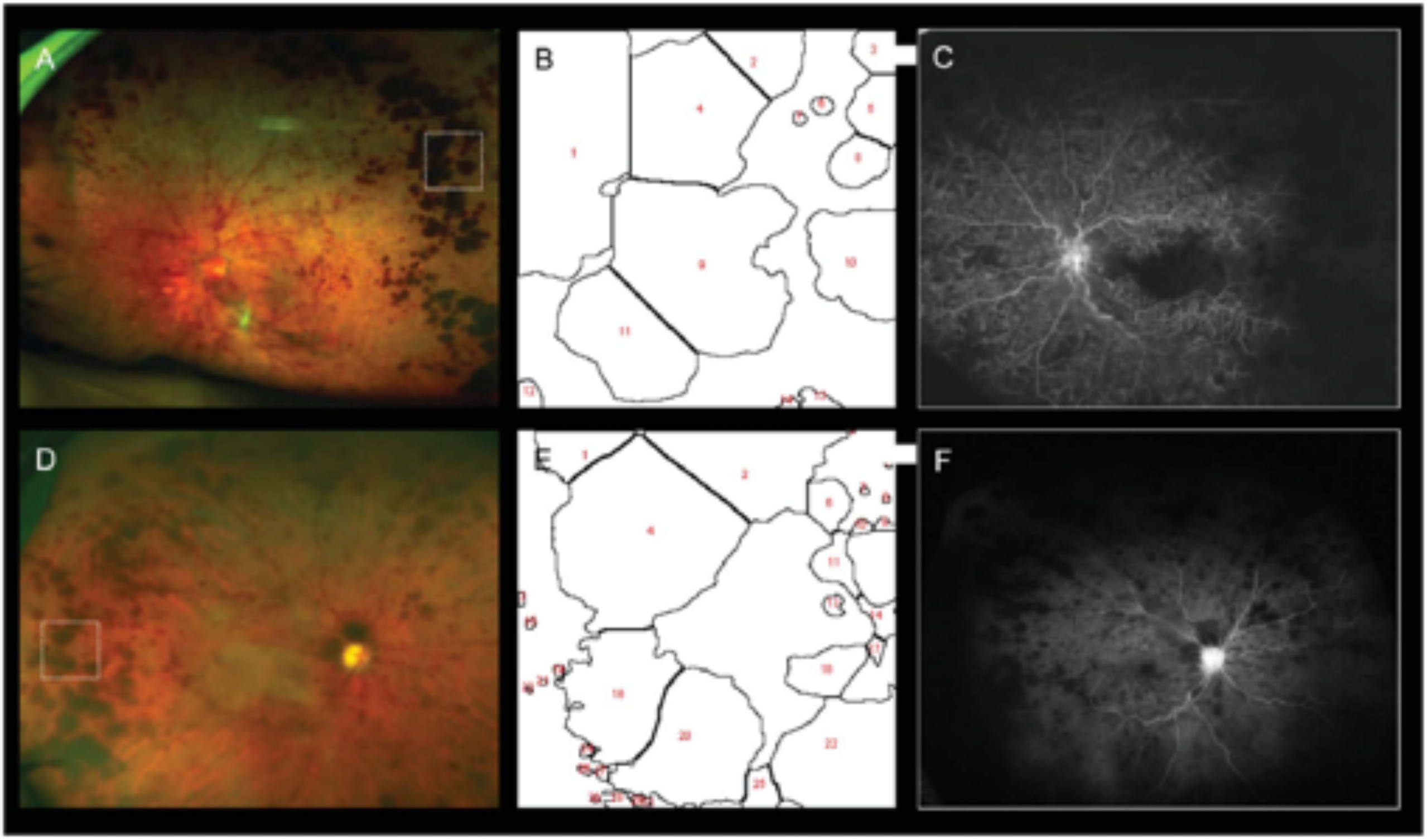


Fig. 3. Large blot hemorrhages visible in the periphery of 2 eyes with ischemic acute CRVO. Ultra-wide field color fundus photographs show large blot hemorrhages predominantly in the retinal periphery (**A** and **D**). **B** and **E.** Results of particle analysis performed to determine the size of peripheral blot hemorrhages at the equatorial retina. The resulting mean sizes of maximum peripheral retinal hemorrhages were 15,269 (**B**) and 22, 262 (**E**) pixels. **C** and **F.** Images from UWF fluorescein angiograms showing large areas of retinal nonperfusion in the periphery (**C** and **F**) and macular ischemia (**C**).

SCIENTIFIC REPORTS

OPEN

Relationship between Optical Intensity on Optical Coherence Tomography and Retinal Ischemia in Branch Retinal Vein Occlusion

Received: 14 November 2017
Accepted: 12 June 2018
Published online: 25 June 2018

Jian Chen, Weiqi Chen, Honghe Xia, Chuang Jin, Xuehui Lu & Haoyu Chen

Branch retinal vein occlusion (BRVO) may be complicated with retinal ischemia in some cases. The purpose of the current study is to investigate the relationship between optical intensity on optical coherence tomography (OCT) and retinal ischemia in BRVO. Twenty-seven eyes diagnosed with BRVO without macular edema were classified into two groups based on the presence or absence of retinal ischemia. The optical intensity of inner retinal layers and photoreceptor inner segment ellipsoid zone/retinal pigment epithelium layer (ISe/RPE) in the affected and unaffected regions were measured on OCT. Their ratio (Optical intensity ratio, OIR) was calculated and compared between affected and unaffected region. In the retinal ischemia group, the optical intensity of inner retinal layers was higher in the affected region compared to the unaffected region while the optical intensity of ISe/RPE was low. The OIR was significantly higher in the affected region compared to control (0.83 ± 0.17 vs 0.68 ± 0.09, $p < 0.001$). However, in the non-ischemic group, there was no significant difference between the affected and unaffected region. The BCVA was moderately correlated with OIR of affected region ($r = 0.489$, $p = 0.010$). Our study suggests that optical intensity ratio on OCT is correlated with retinal ischemia in BRVO.

SCIENTIFIC REPORTS

OPEN

Relationship between Optical Intensity on Optical Coherence Tomography and Retinal Ischemia in Branch Retinal Vein Occlusion

Received: 14 November 2017
Accepted: 12 June 2018
Published online: 25 June 2018

Jian Chen, Weiqi Chen, Honghe Xia, Chuang Jin, Xuehui Lu & Haoyu Chen

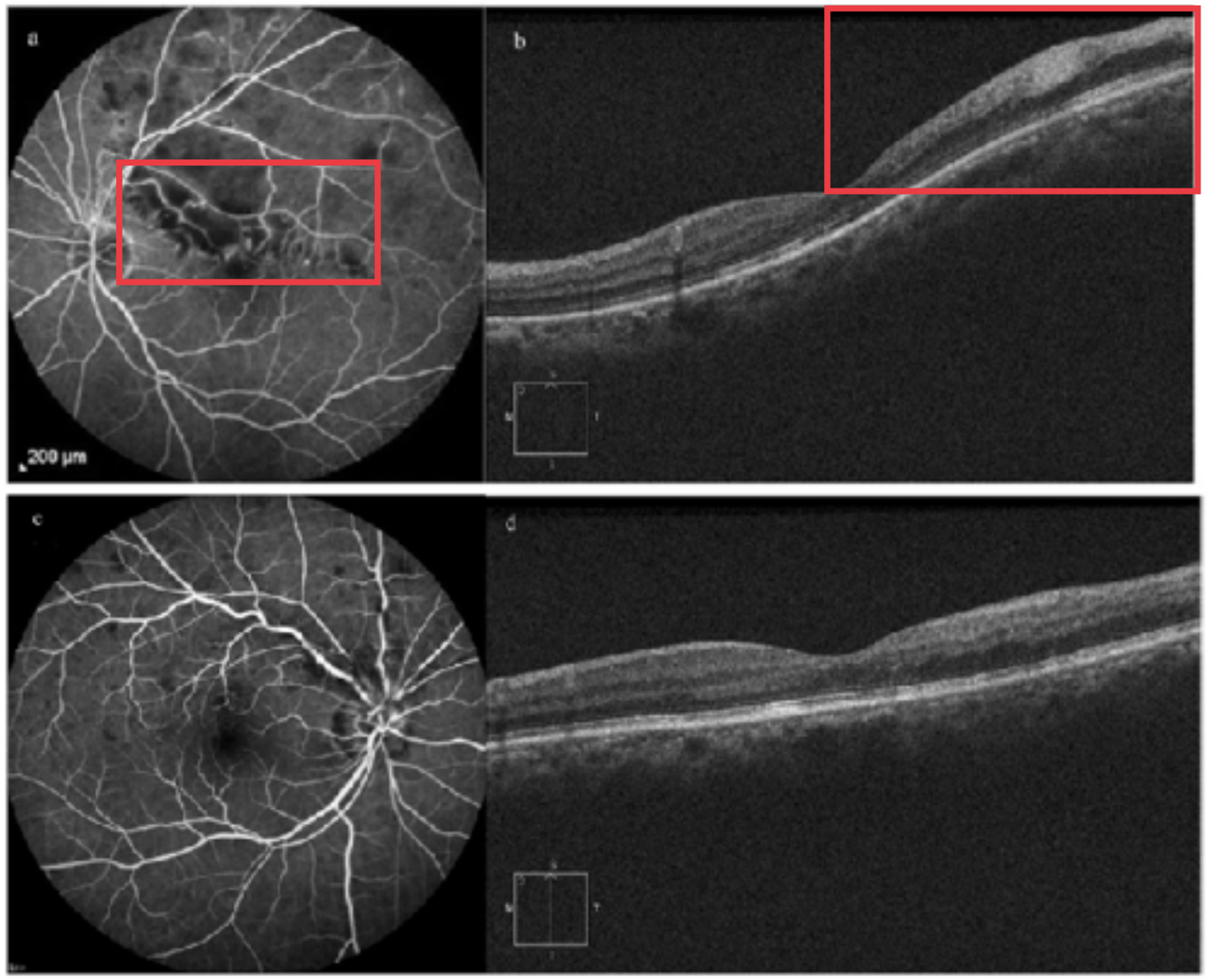


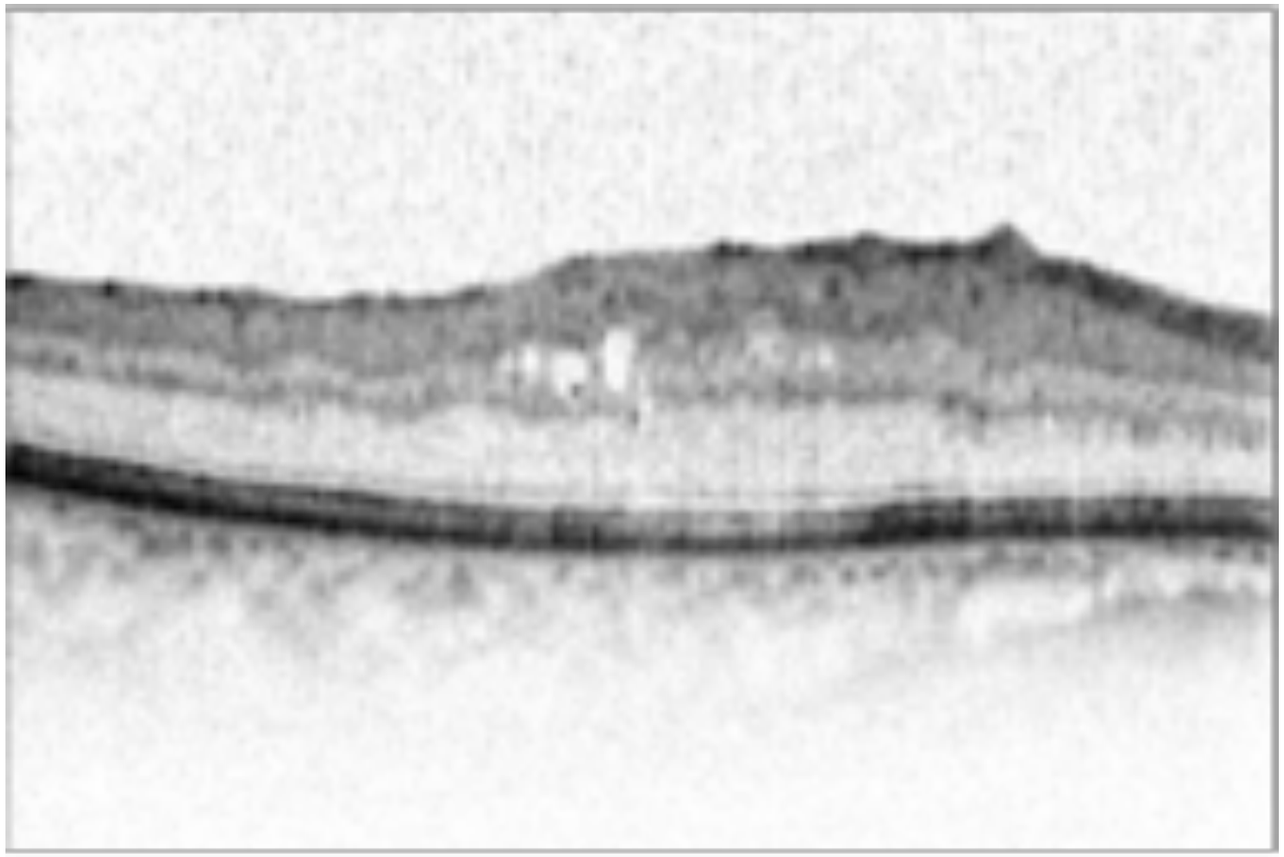
Figure 3. Fundus Fluorescein Angiography venous phase images (**a**,**c**) and corresponding SD-OCT vertical scan images (**b**,**d**) of two patients with branch retinal vein occlusion. (**a**) Retinal non-perfusion can be identified at supratemporal region. (**b**) Increased optical intensity can be identified at inner retina and reduced optical intensity at ellipsoid zone and retinal pigment epithelium. (**c**) There is no retinal nonperfusion. (**d**) no obvious change of optical intensity can be seen.

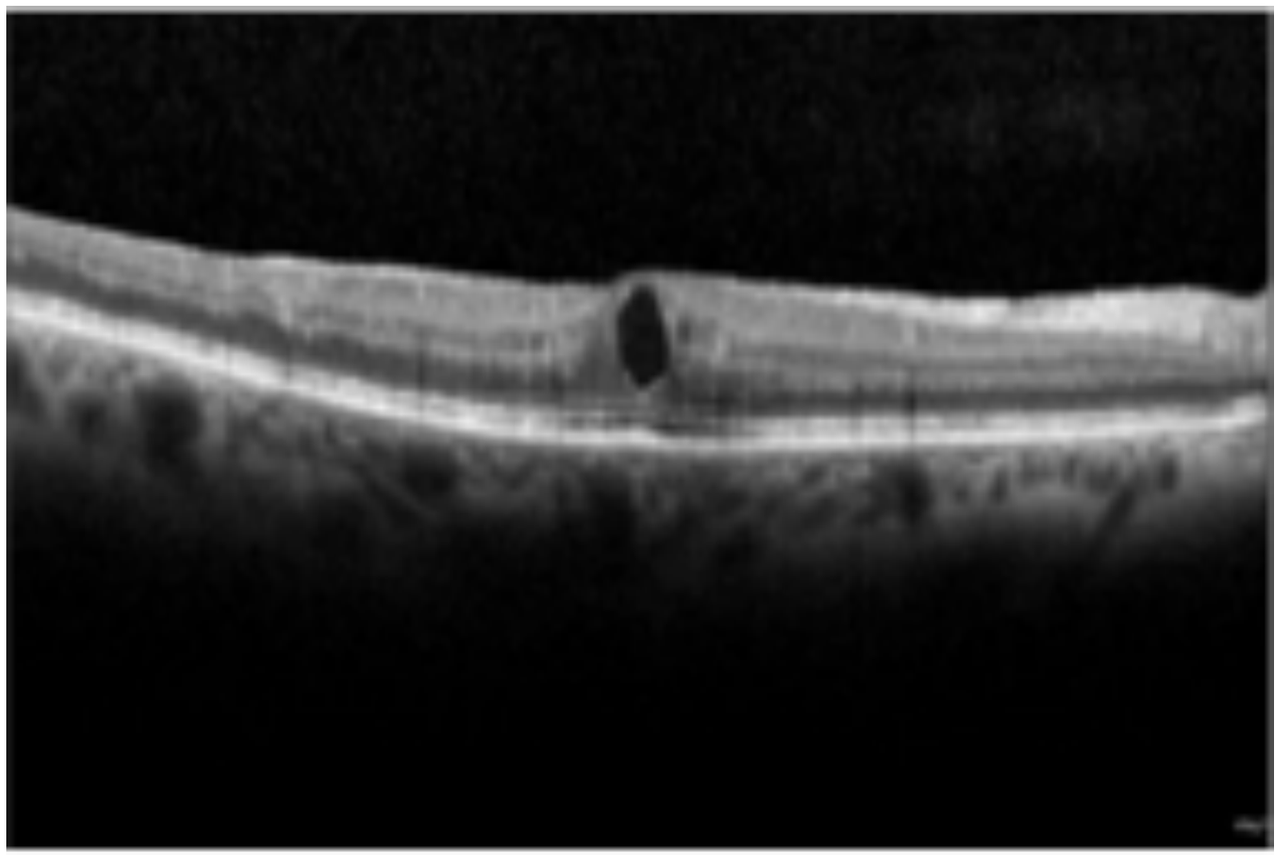
RVO und “morphologischer“ Befund im OCT:

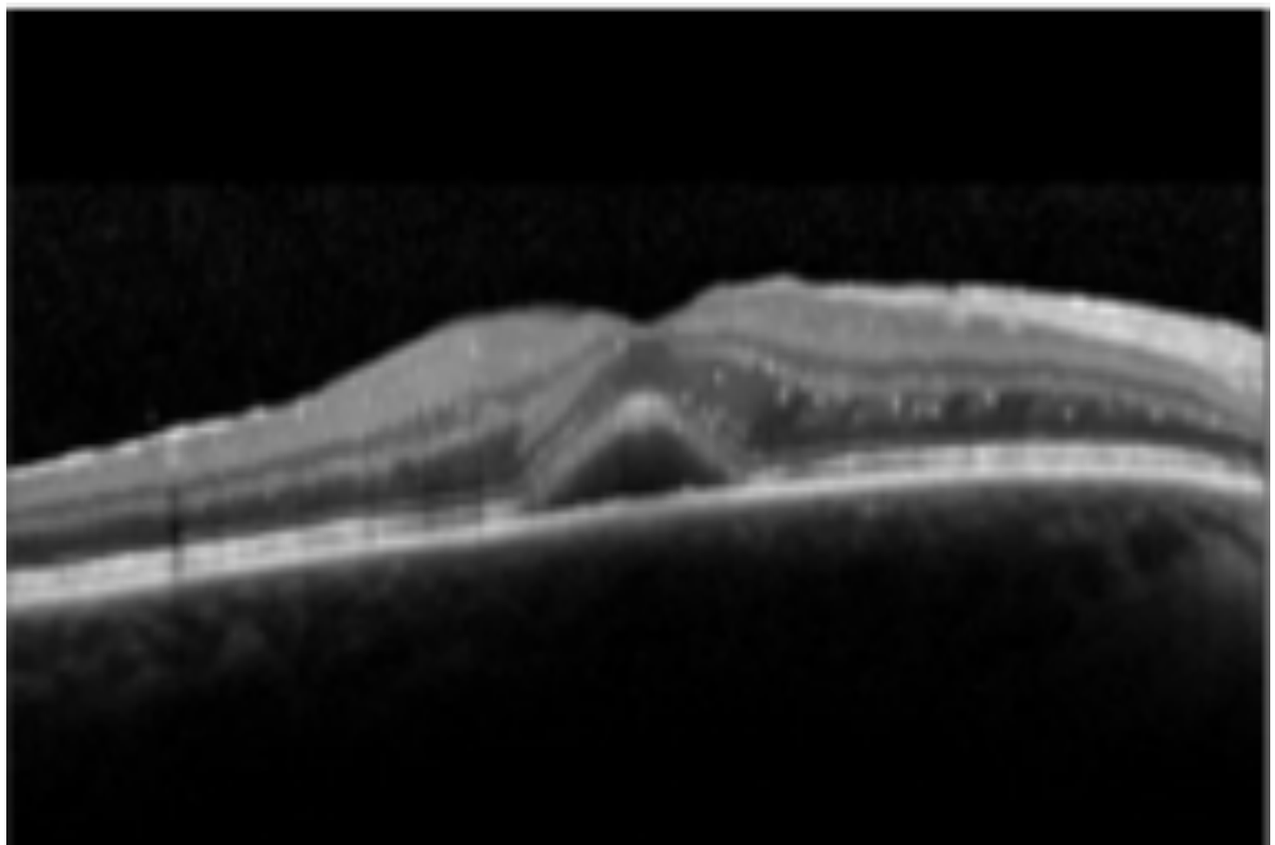
MÖ ist nicht gleich MÖ !

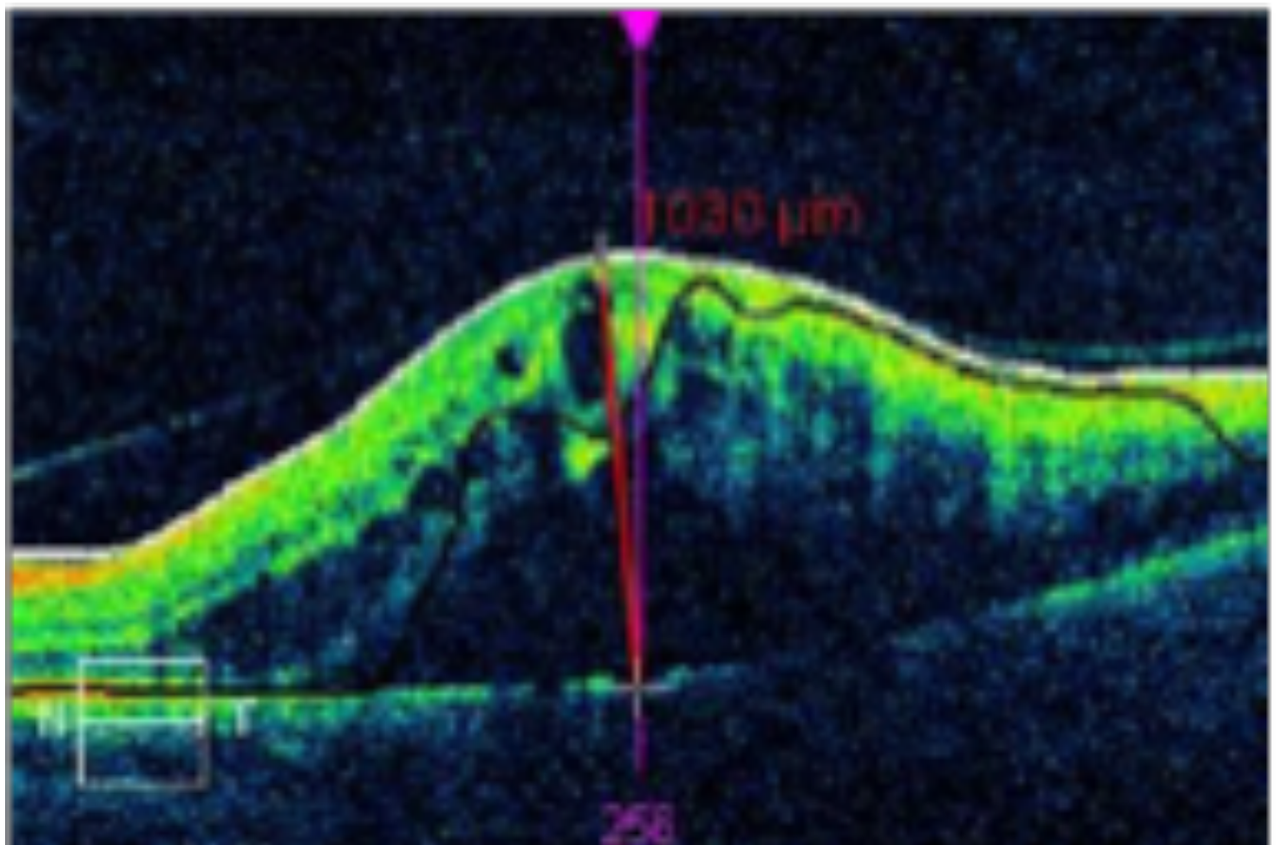
Es gibt nicht ***das*** Kriterium !

MÖ : Unterschiedliche Morphologie









Indian Journal of Ophthalmology
Home | Current Issue | Instructions | Submit Articles

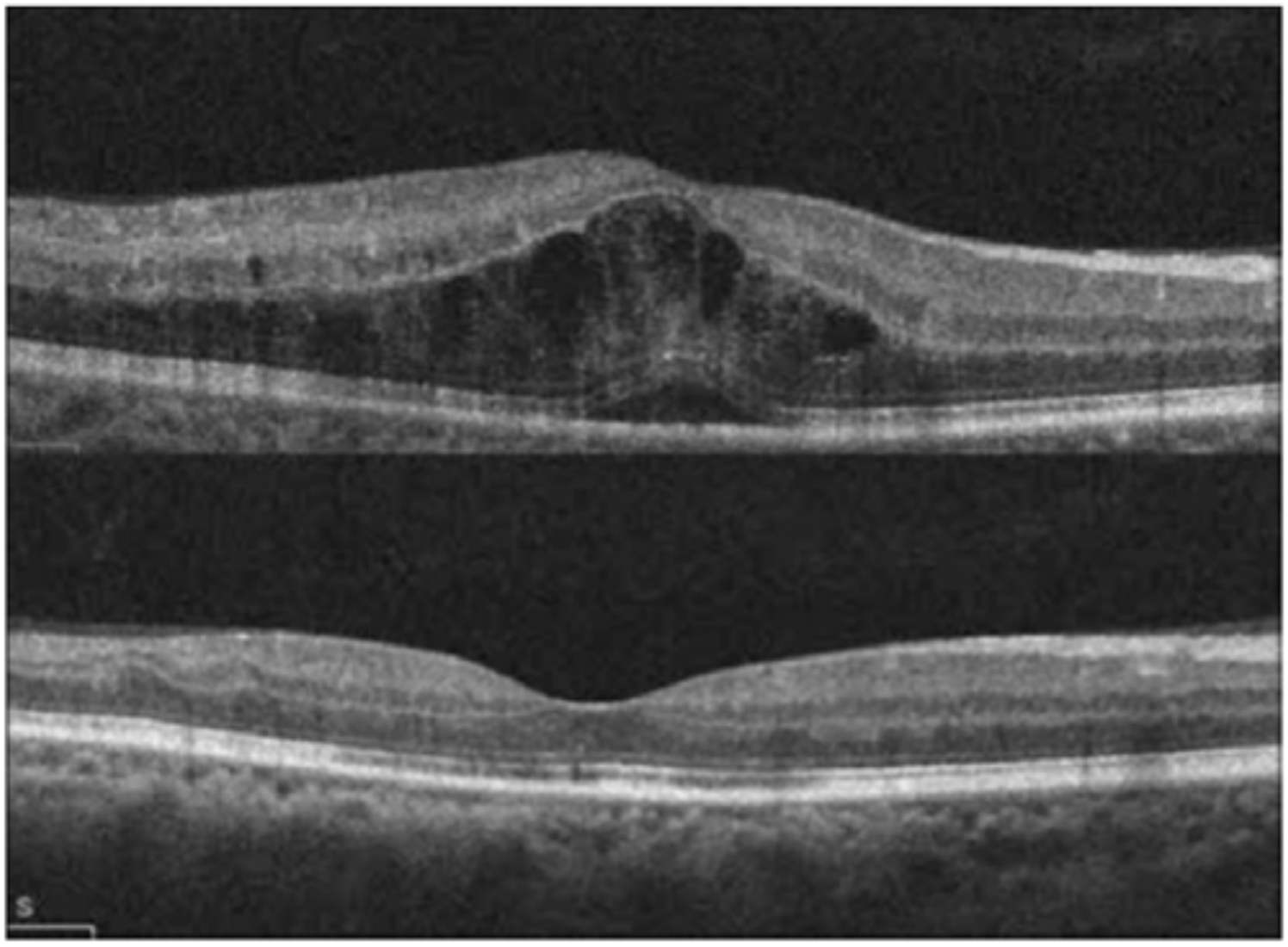
Indian J Ophthalmol. 2018 Sep; 66(9): 1291–1294.
doi: 10.4103/ijo.IJO_342_18: 10.4103/ijo.IJO_342_18
PMCID: PMC6113821
PMID: 30127143

Baseline morphological characteristics as predictors of final visual acuity in patients with branch retinal vein occlusions: MARVEL report no. 3

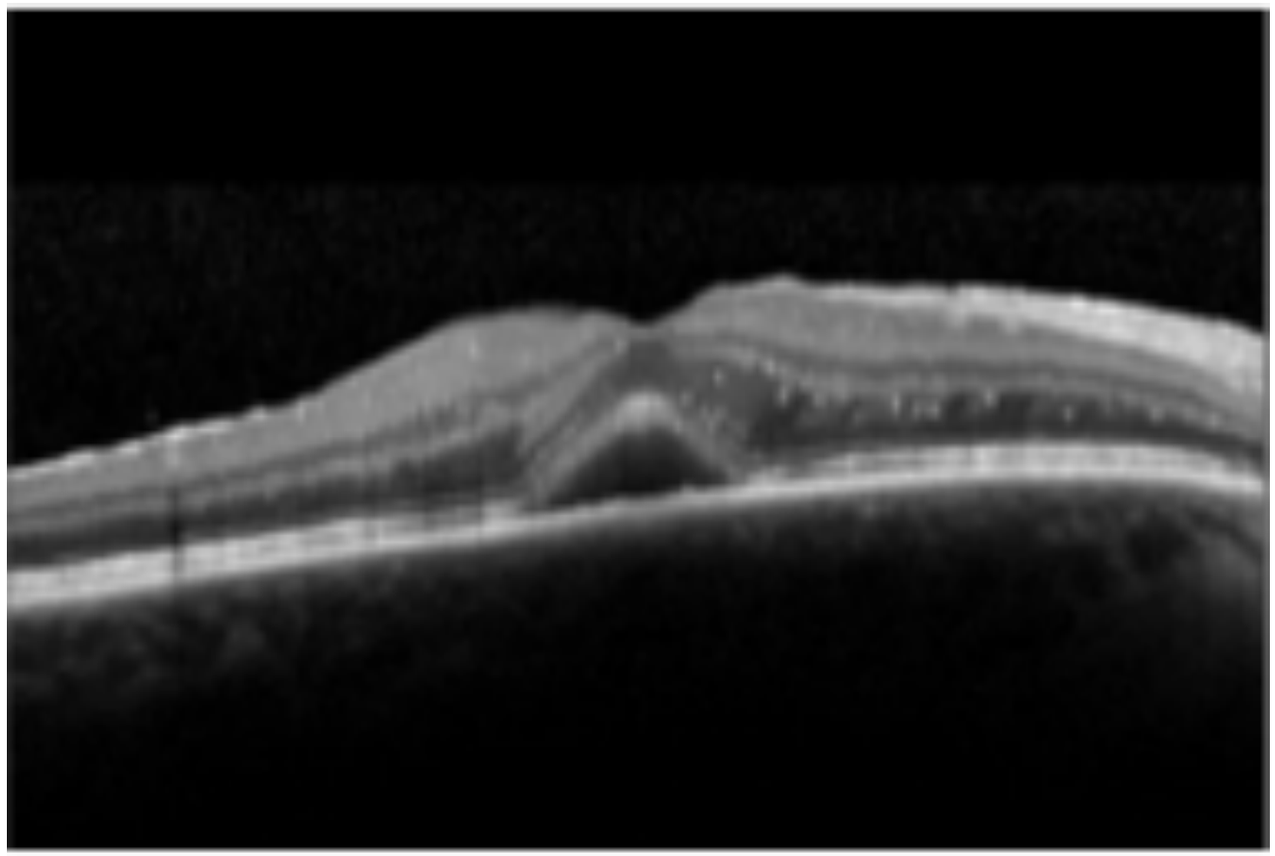
Raja Narayanan,[1,2] Michael W Stewart,[3] Jay Chhablani,[1,2] Bhavik Panchal,[1] Rajeev Reddy Pappuru,[1,3] Taraprasad Das,[1] Subhadra Jalali,[1] and M Hasnat Ali[4]

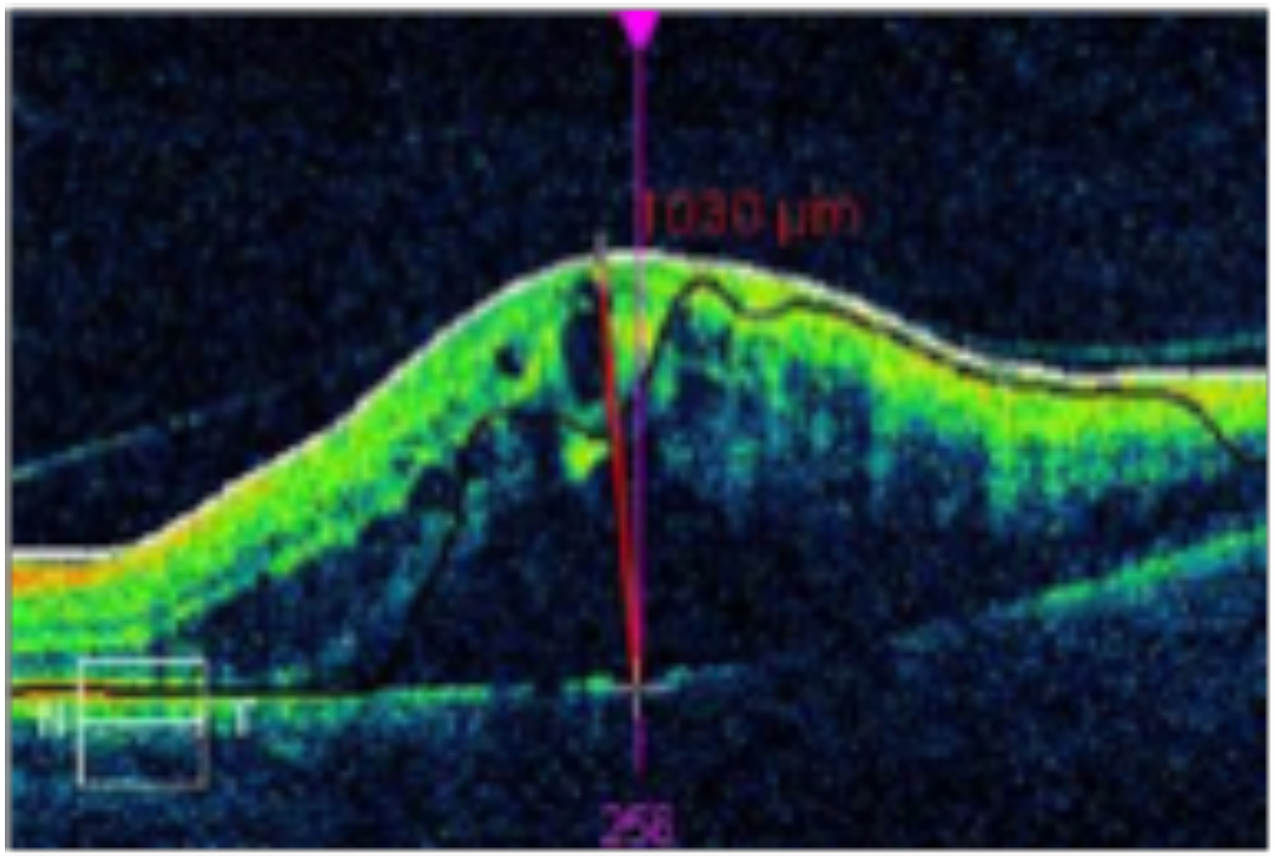
Baseline OCT >500 µm prognostisch günstig

Subretinale Flüssigkeit kein Einfluß



Subretinale Flüssigkeit





Wang MZ, Feng K, Lu Y, Qian F, Lu XR, Zang SW, Zhao L. Predictors of short-term outcomes related to central subfield foveal thickness after intravitreal bevacizumab for macular edema due to central retinal vein occlusion. Int J Ophthalmol. 2016 Jan 18;9(1):86-92.

Gesamtdicke MÖ entscheidender als subretinale Flüssigkeit !

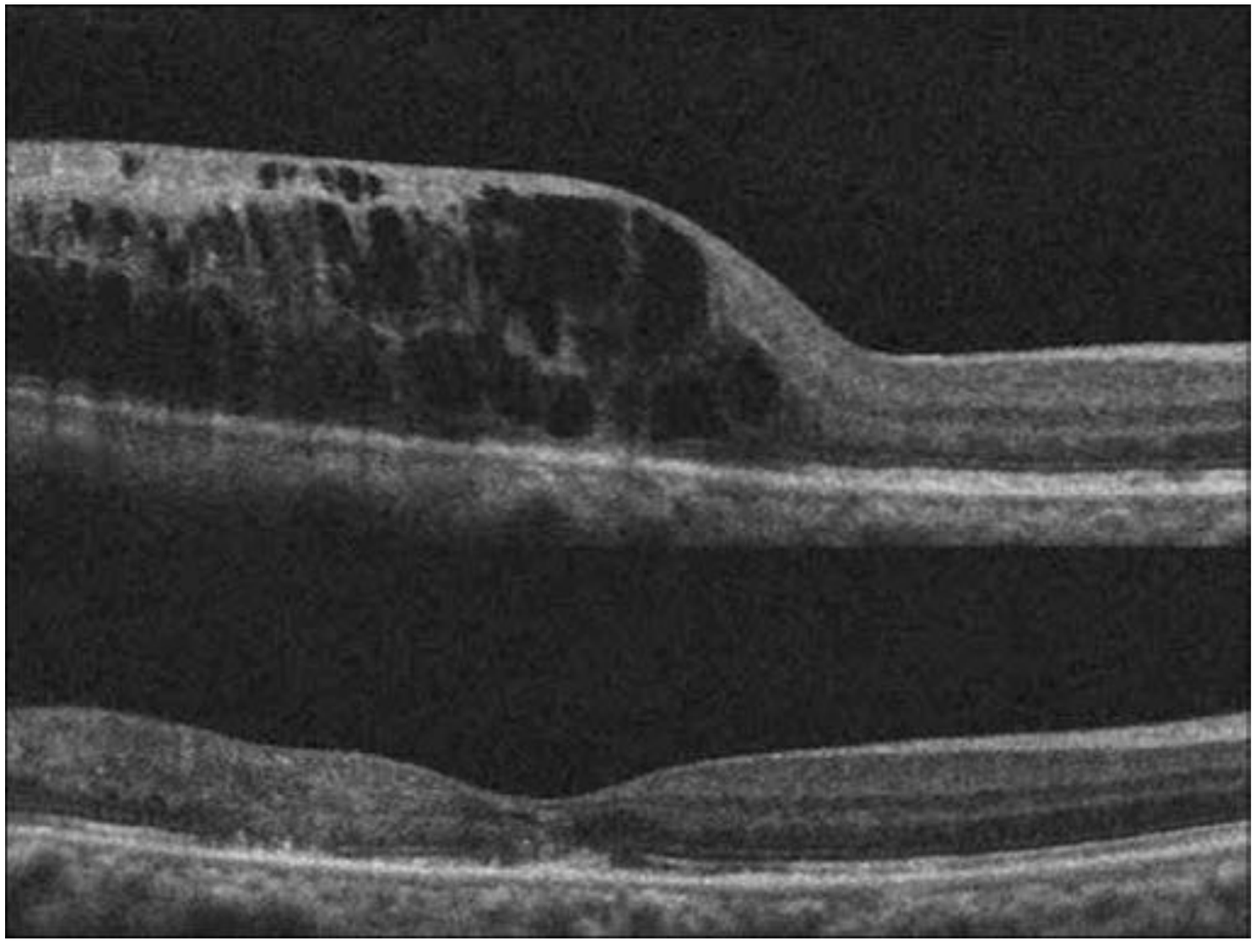
Indian Journal of Ophthalmology
Home | Current Issue | Instructions | Submit Articles

Indian J Ophthalmol. 2018 Sep; 66(9): 1291–1294.
doi: 10.4103/ijo.IJO_342_18: 10.4103/ijo.IJO_342_18
PMCID: PMC6113821
PMID: 30127143

Baseline morphological characteristics as predictors of final visual acuity in patients with branch retinal vein occlusions: MARVEL report no. 3

Raja Narayanan,[1,2] Michael W Stewart,[3] Jay Chhablani,[1,2] Bhavik Panchal,[1] Rajeev Reddy Pappuru,[1,3] Taraprasad Das,[1] Subhadra Jalali,[1] and M Hasnat Ali[4]

"Cystoid spaces"
in Ganglionzellschicht
prognostisch ungünstig

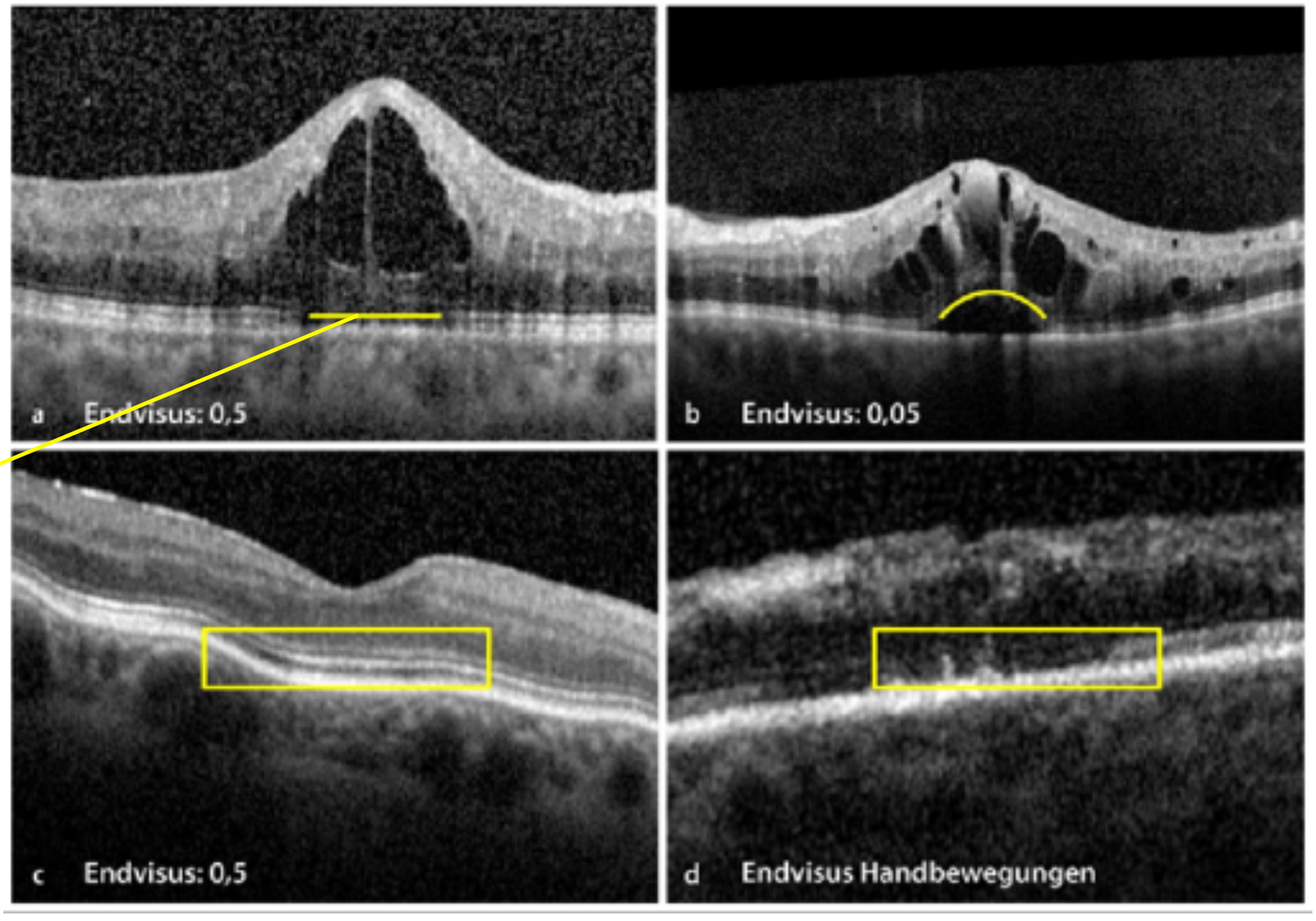


K. Schröder · P. Ackermann · M. Brachert · S. Bairov · G. Geerling · R. Guthoff
Augenklinik Universitätsklinikum Düsseldorf, Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Deutschland

Liefert die OCT-Morphologie Hinweise für die Visusprognose nach Venenverschluss?

Guter Visus nach Therapie, wenn:

- MÖ vor Therapie meist oberhalb ellipsoider Zone der Innensegmente (ISe)
- Nach Ödemresorption ISe häufiger morphologisch intakt



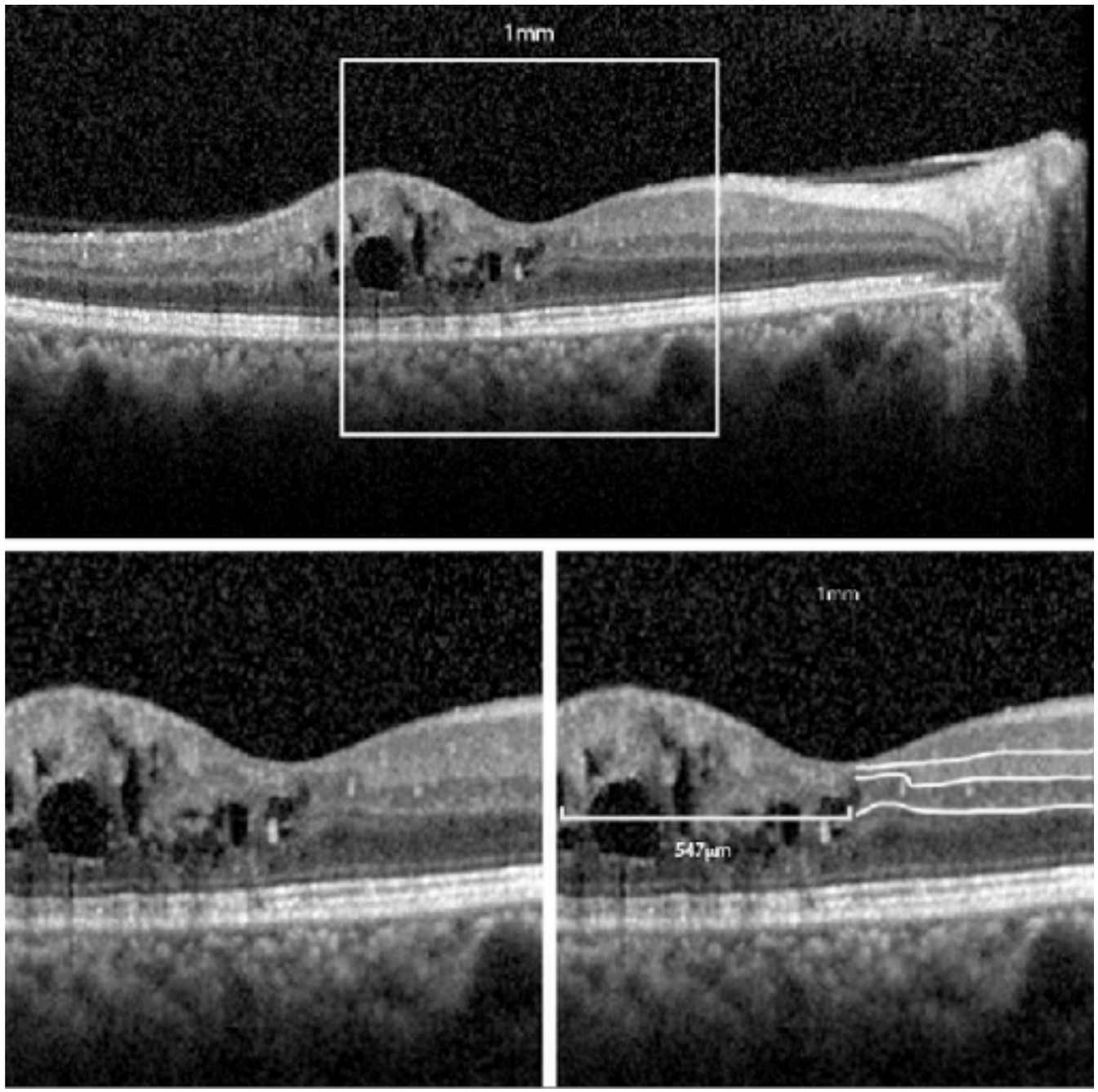
Disorganization of the Retinal Inner Layers as a Predictor of Visual Acuity in Eyes With Macular Edema Secondary to Vein Occlusion

MICHAEL MIMOUNI, OR SEGEV, DALIA DORI, NOA GEFFEN, VICTOR FLORES, AND ORI SEGAL

Am J Ophthalmol 2017;182:160–167

DRIL

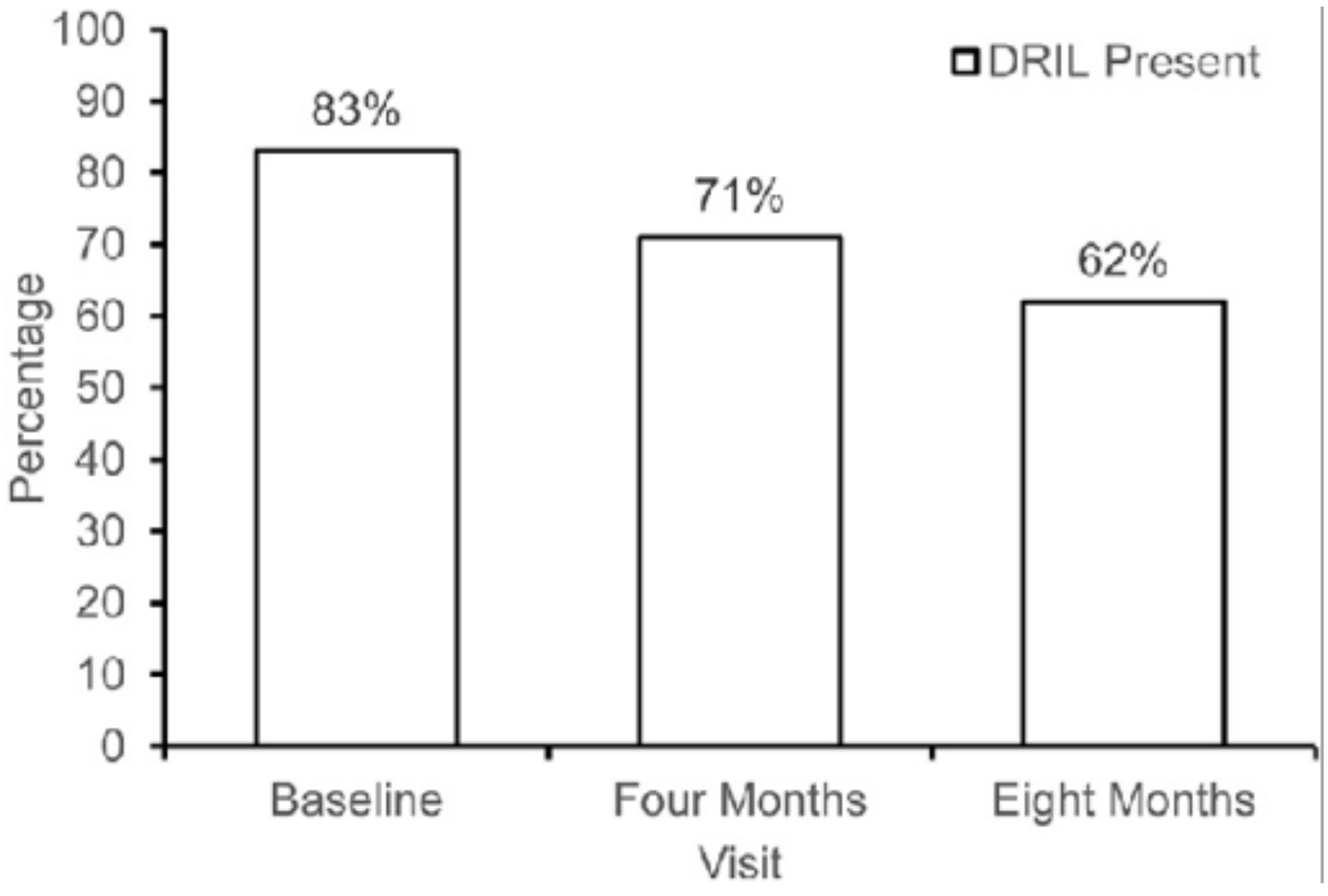
- Meßbereich Fovea (1mm)
- Keine Identifikation der Grenzen zwischen innerer plexiformer Schicht, innerer nukleärer Schicht und äußerer plexiformer Schicht



Disorganization of the Retinal Inner Layers as a Predictor of Visual Acuity in Eyes With Macular Edema Secondary to Vein Occlusion

MICHAEL MIMOUNI, OR SEGEV, DALIA DORI, NOA GEFFEN, VICTOR FLORES, AND ORI SEGAL

Am J Ophthalmol 2017;182:160–167

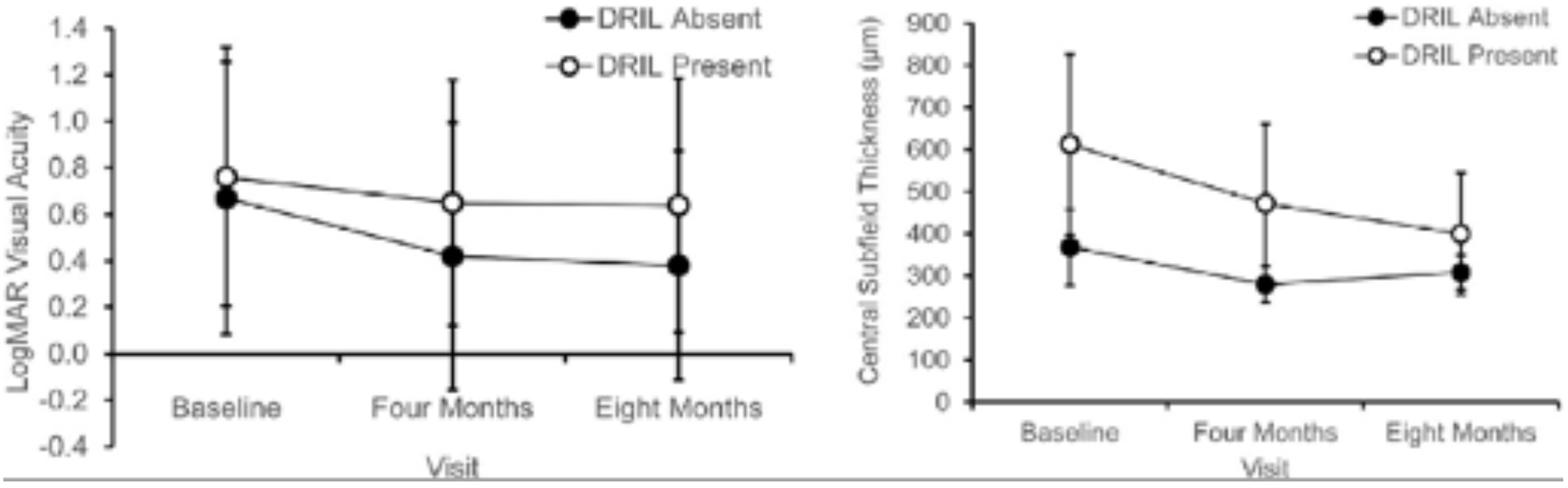


DRIL: „Regeneration“ ist möglich

Disorganization of the Retinal Inner Layers as a Predictor of Visual Acuity in Eyes With Macular Edema Secondary to Vein Occlusion

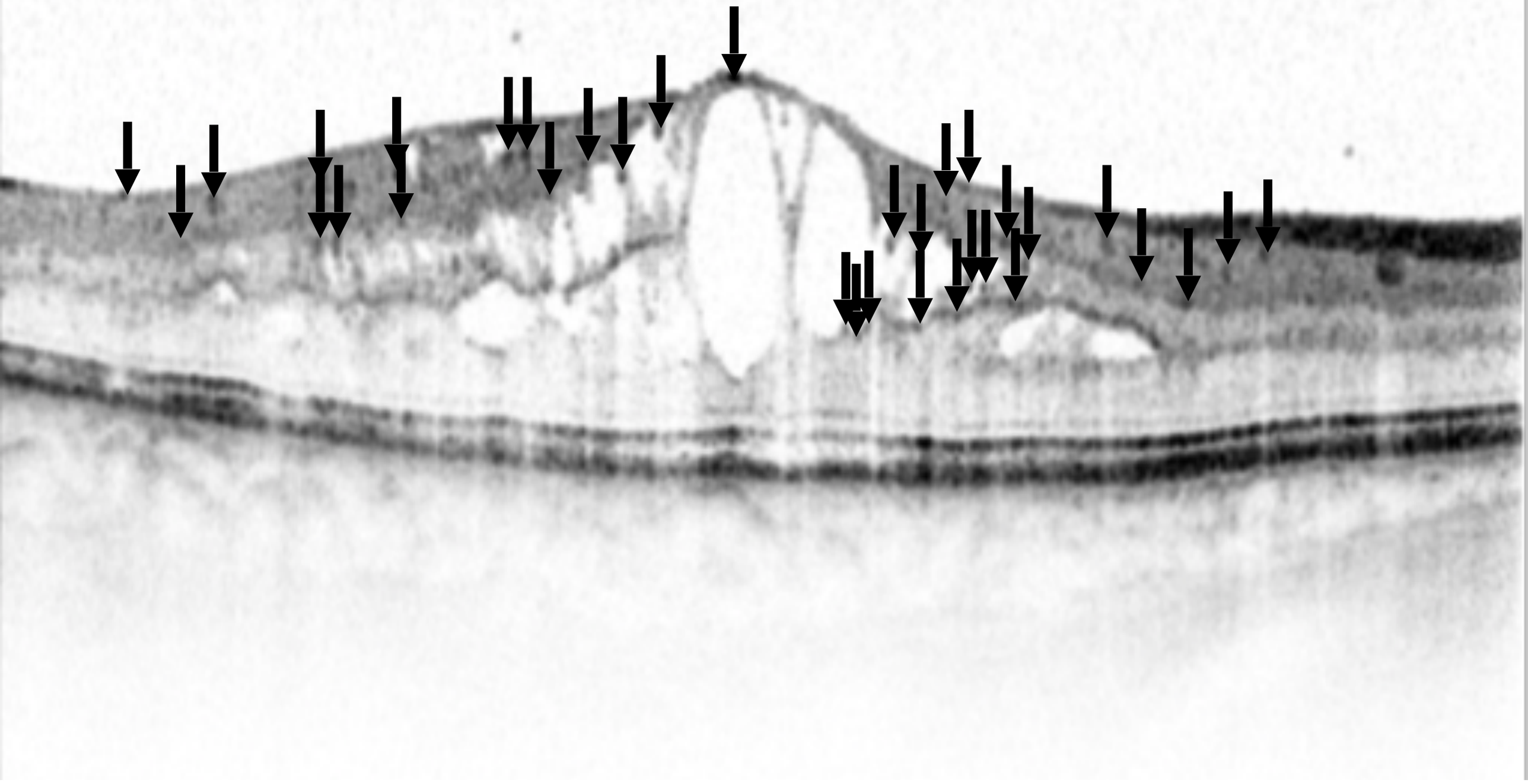
MICHAEL MIMOUNI, OR SEGEV, DALIA DORI, NOA GEFFEN, VICTOR FLORES, AND ORI SEGAL

Am J Ophthalmol 2017;182:160–167



DRIL: Schlechtere Visusentwicklung trotz Rückgang MÖ

„Hyperreflective Dots“



65 J., RA rezidivierendes MÖ bei Z.n. ZVV, Z.n. mehrfachem Switching

Association Between Hyperreflective Dots on Spectral-Domain Optical Coherence Tomography in Macular Edema and Response to Treatment

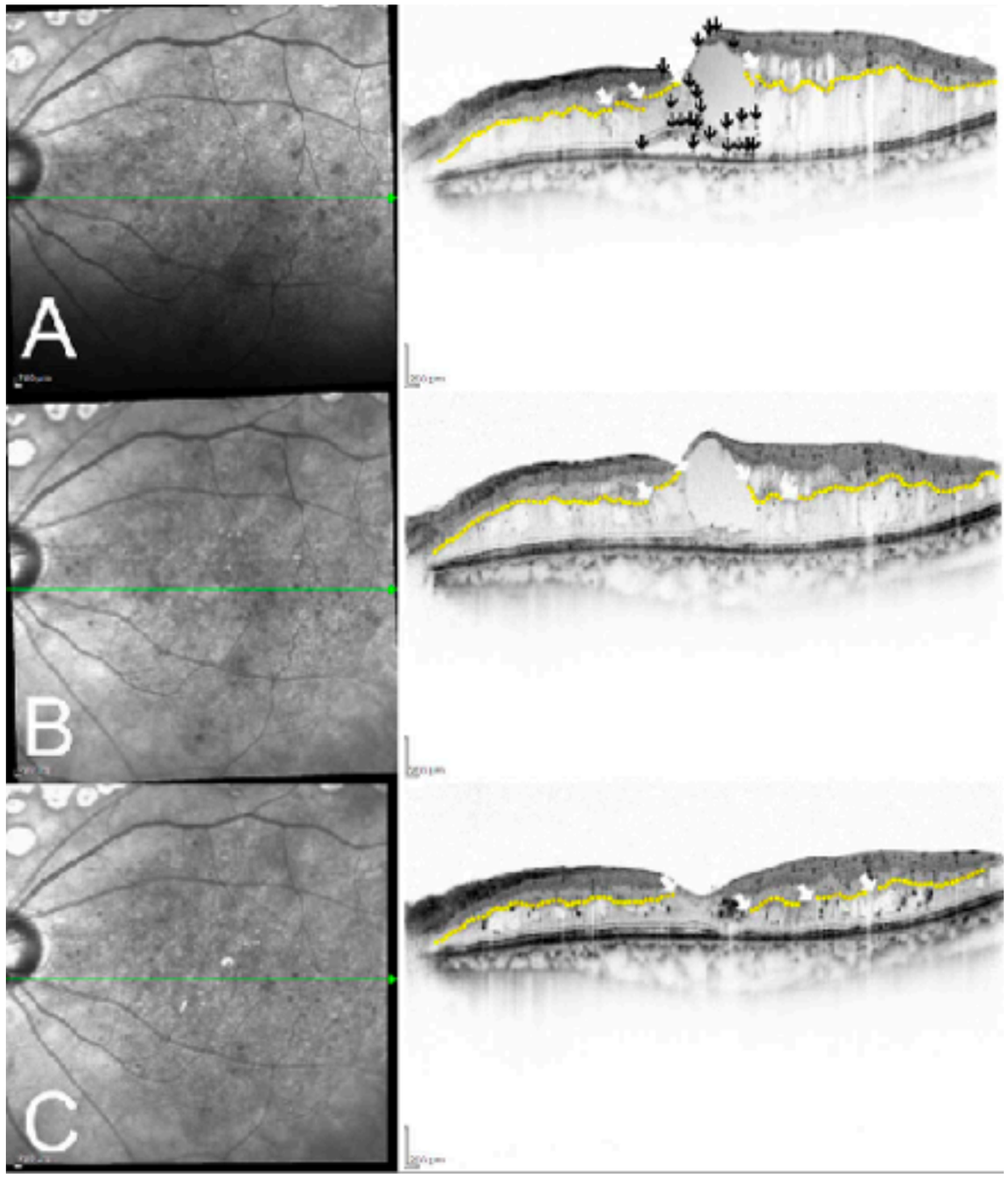
Hye Seong Hwang,[1] Ju Byung Chae,[1] Jin Young Kim,[2] and Dong Yoon Kim[1]

[1]Department of Ophthalmology, Chunghak National University Hospital, College of Medicine, Chunghak National University, Cheongju, Korea
[2]Department of Ophthalmology, Jeju National University Hospital, Jeju National University School of Medicine, Jeju, Korea

Invest Ophthalmol Vis Sci 2017;58:5958–5967

Hyperreflective Dots (HRD)

- MÖ bei DR und RVO
- Bevacizumab vs. Bevacizumab x3 + Dexamethason bei Non-Response
- Bevacizumab-Responder = geringe Anzahl HRD
- Dexamethason-Responder = hohe Anzahl HRD
- **<u>HRD = Zeichen inflammatorischer Aktivität?</u>**



PLOS ONE

RESEARCH ARTICLE

Optical coherence tomography findings as a predictor of clinical course in patients with branch retinal vein occlusion treated with ranibizumab

Akira Shiono, Jiro Kogo *, Hiroki Sasaki, Ryo Yomoda, Tatsuya Jujo, Naoto Tokuda, Yasushi Kitaoka, Hitoshi Takagi

Department of Ophthalmology, St. Marianna University School of Medicine, Kawasaki, Kanagawa, Japan

* kogo@marianna-u.ac.jp

Check for updates

Ischämie und Netzhautatrophie…

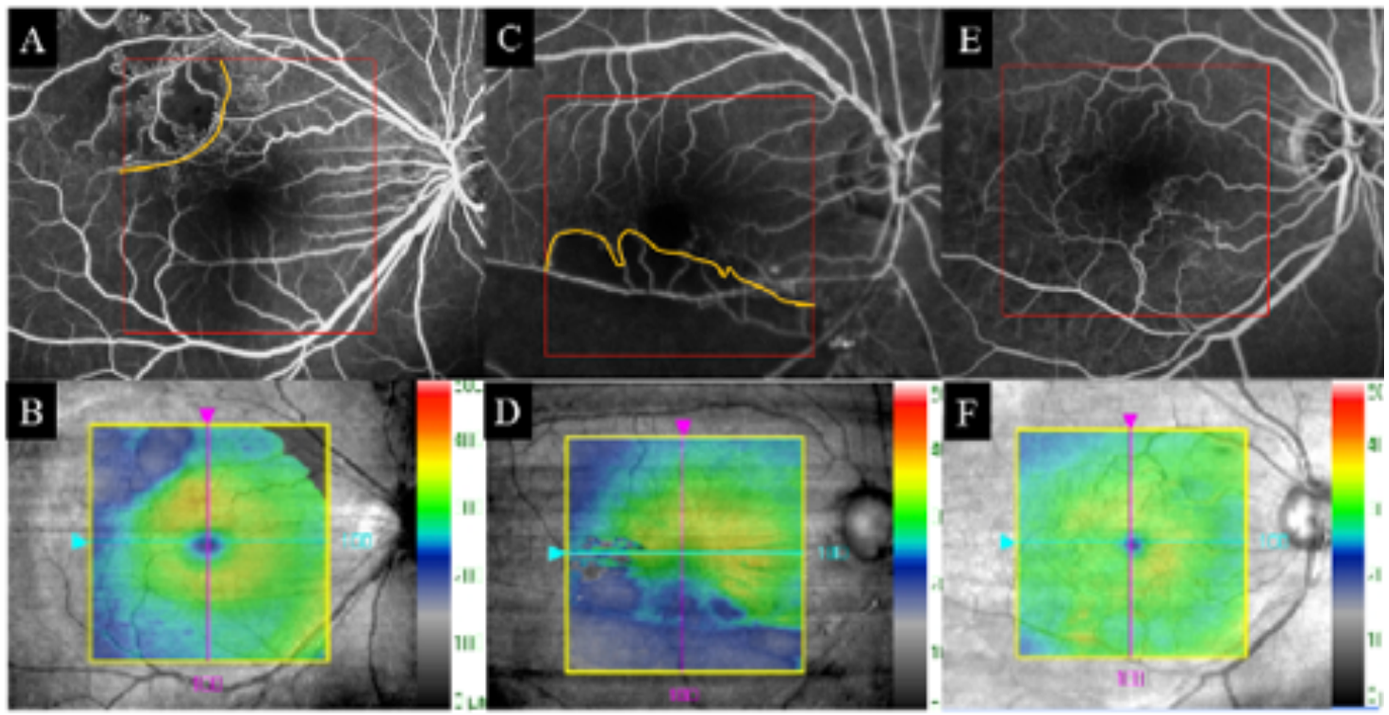


Fig 6. Fluorescein angiography (FA) images and color maps of retinal thickness using optical coherence tomography (OCT) images. (A, C) FA images of eyes with nonperfusion areas (NPAs) (shown in orange). (B, D) Color maps of eyes with NPAs which corresponded to the thinning areas (in blue) detected by OCT. (E) FA of eyes without NPAs. (F) The thinning areas were not detected in OCT.

Discussion

In this study, patients received IVRs on the 1+PRN regimen. VA and CFT significantly improved from baseline to 12 months. An improvement of 0.31 units on the logMAR scale

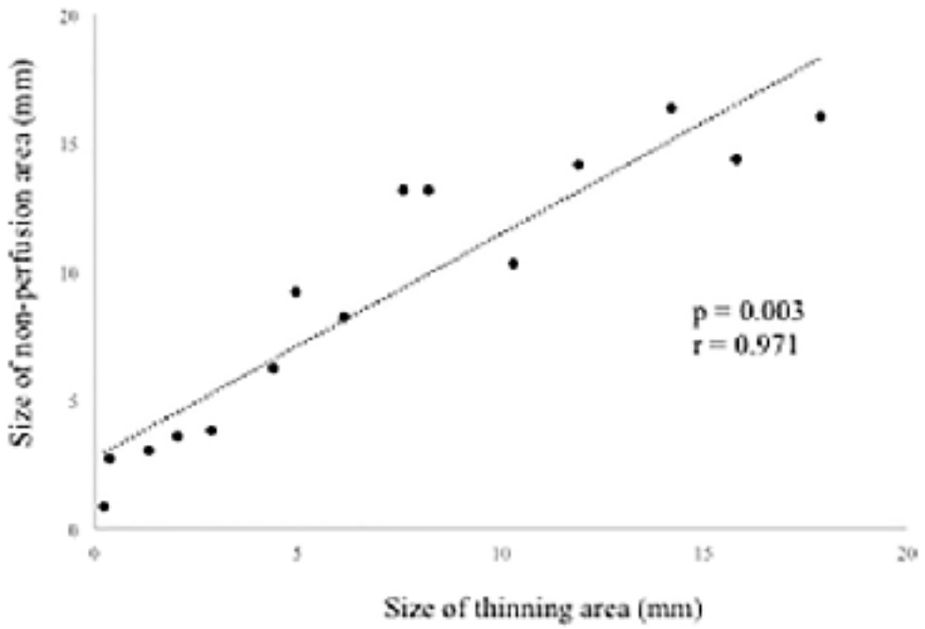


Fig 7. Correlation between nonperfusion areas (NPAs) in fluorescein angiography (FA) and thinning areas in optical coherence tomography (OCT).

Non-Perfusion Areale korrespondieren mit Netzhautverdünnung im OCT !

PLOS ONE

RESEARCH ARTICLE

Optical coherence tomography findings as a predictor of clinical course in patients with branch retinal vein occlusion treated with ranibizumab

Akira Shiono, Jiro Kogo*, Hiroki Sasaki, Ryo Yomoda, Tatsuya Jujo, Naoto Tokuda, Yasushi Kitaoka, Hitoshi Takagi

Department of Ophthalmology, St. Marianna University School of Medicine, Kawasaki, Kanagawa, Japan

* kogo@marianna-u.ac.jp

Check for updates

… eine Frage der Zeit !

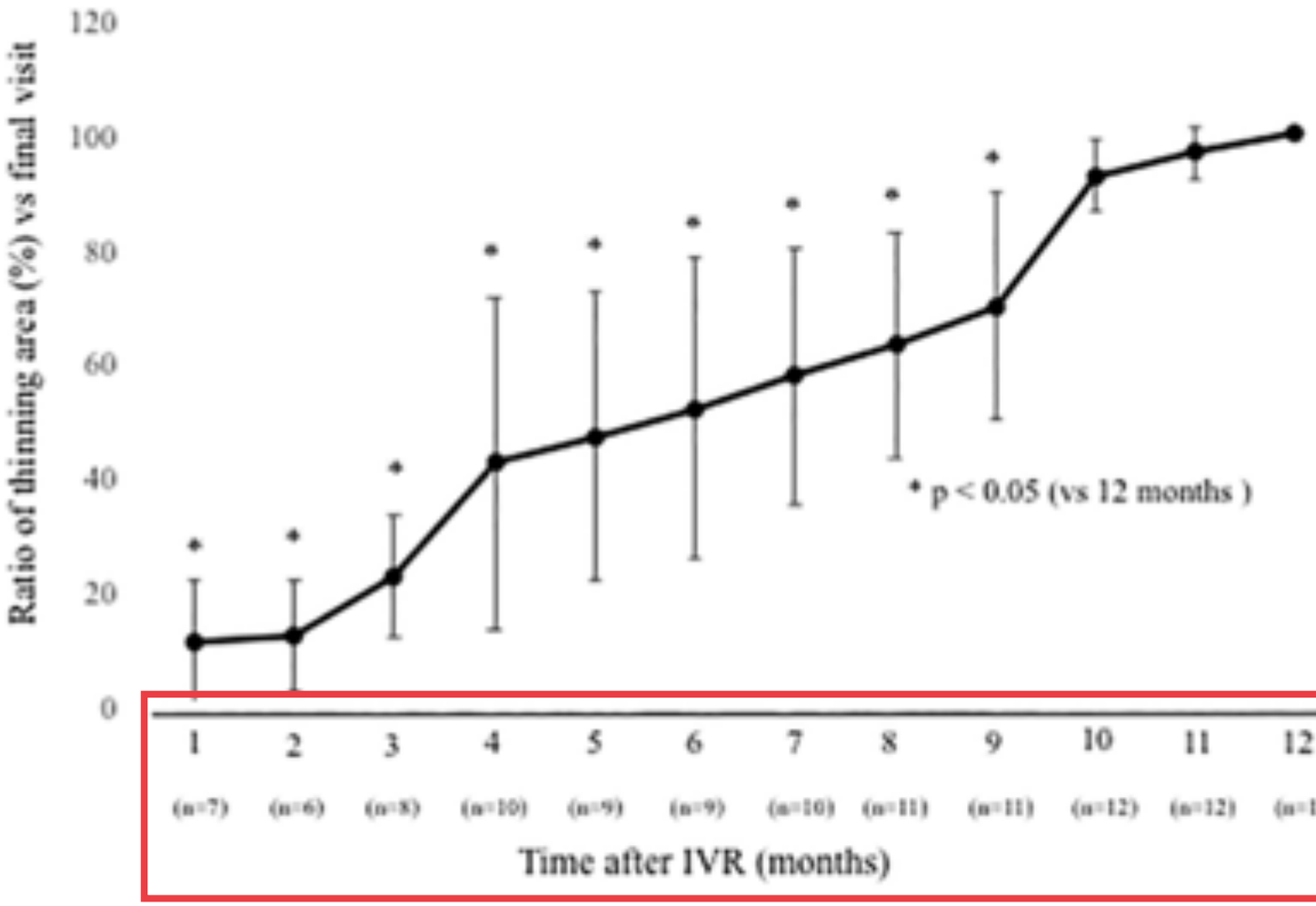


Fig 9. Changes in the ratio of thinning areas within the macular area at points of resolution of macular edema (ME) compared with the final visit. The ratio of the thinning area, which is indicated in blue on the macular cube scan (200 × 200), was defined as the measurement of the thinning area at each visit/measurement of the thinning area at the final visit. Only eyes that met the definition of resolution of ME are included. The ratio of thinning areas gradually increased until 9 months ($p < 0.05$, respectively). IVR = intravitreal ranibizumab.

Anteil Netzhautverdünnung Makula unter IVOM progredient

Warum welche Therapie & Strategie bei RVO ?

Stellungnahme RVO 2018

- COMRADE-B (Dexamethason versus Ranibizumab beim Venenastverschluss (VAV)(10),
- COMRADE-C (Dexamethason versus Ranibizumab beim Zentralvenenverschluss (ZVV)(11),
- SCORE 2 (Aflibercept versus Bevacizumab beim ZVV und Hemi-ZVV)(12),
- MARVEL-1 (Ranibizumab versus Bevacizumab beim VAV)(13),
- die Studie von Gado et al. (Dexamethason versus Bevacizumab beim ZVV)(14),
- die Studie von Lotfy et al. (Aflibercept versus Bevacizumab beim ZVV)(15),
- die CRAVE-Studie (Ranibizumab versus Bevacizumab beim RVV)(16) und
- die COMO-Studie (Dexamethason versus Ranibizumab beim VAV)(17).

*Stellungnahme RVO 2018

Welche Substanzgruppe?*

AMERICAN JOURNAL OF OPHTHALMOLOGY®

Clinical Efficacy and Safety of Ranibizumab Versus Dexamethasone for Central Retinal Vein Occlusion (COMRADE C): A European Label Study

HANS HOERAUF, NICOLAS FELTGEN, CLAUDIA WEISS, EVA-MARIA PAULUS, STEFFEN SCHMITZ-VALCKENBERG, AMELIE PIELEN, PANKAJ PURI, HÜSNÜ BERK, NICOLE ETER, PETER WIEDEMANN, GABRIELE E. LANG, MATUS REHAK, ARMIN WOLF, THOMAS BERTELMANN, AND LARS-OLOF HATTENBACH, ON BEHALF OF THE COMRADE-C STUDY GROUP

Acta Ophthalmologica

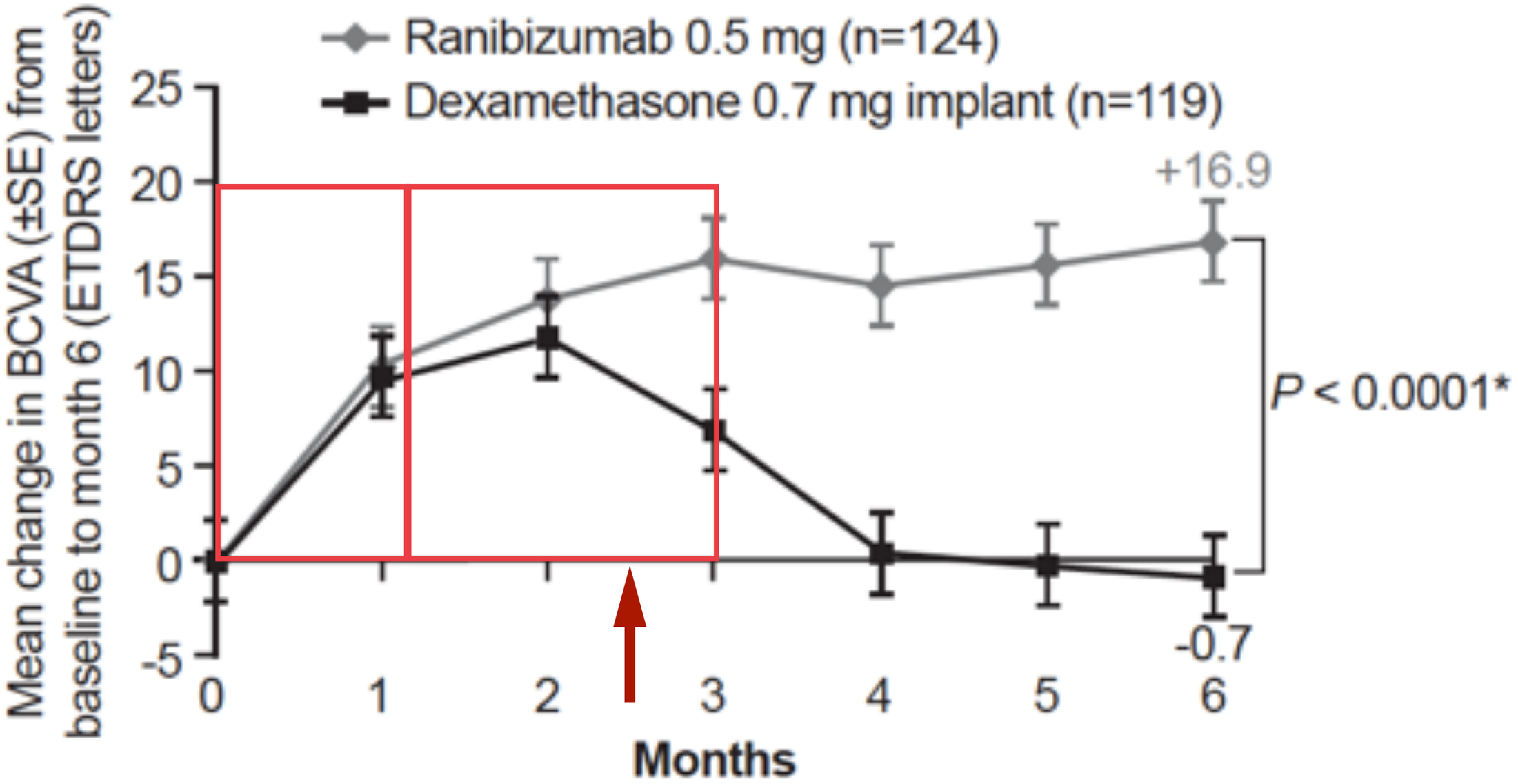
Acta Ophthalmologica 2017

Head-to-head comparison of ranibizumab PRN versus single-dose dexamethasone for branch retinal vein occlusion (COMRADE-B)

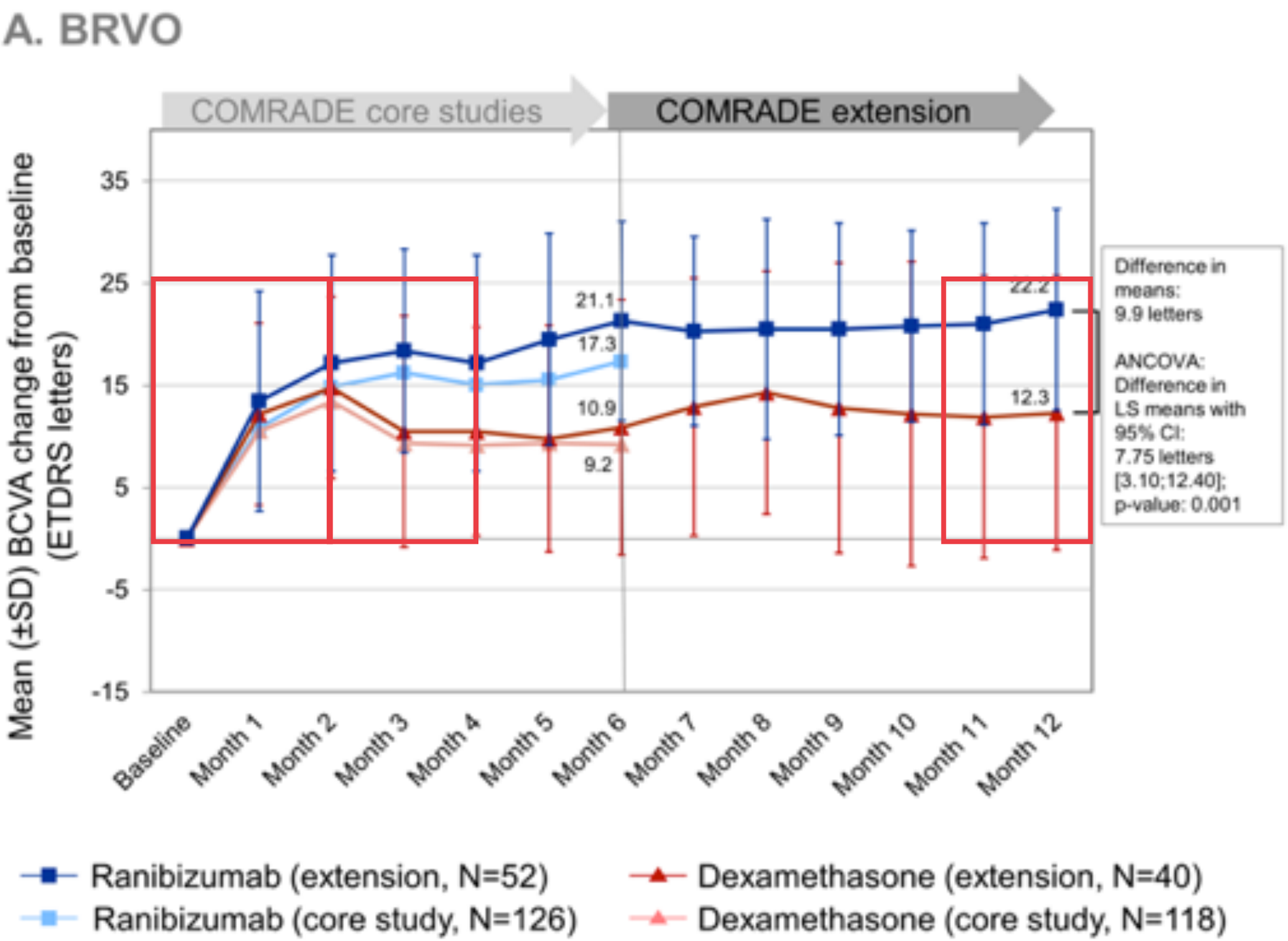
Lars-Olof Hattenbach,[1] Nicolas Feltgen,[2] Thomas Bertelmann,[2,3] Steffen Schmitz-Valckenberg,[4] Hüsnü Berk,[5] Nicole Eter,[6] Gabriele E. Lang,[7] Matus Rehak,[8,9] Simon R. Taylor,[10] Armin Wolf,[11] Claudia Weiss,[3] Eva-Maria Paulus[3] Amelie Pielen[12] and Hans Hoerauf[2] on behalf of the COMRADE-B Study Group

[1]Department of Ophthalmology, Ludwigshafen Hospital, Ludwigshafen, Germany; [2]Department of Ophthalmology, Georg-August-University Göttingen, Göttingen, Germany; [3]Novartis Pharma GmbH, Nuremberg, Germany; [4]Department of Ophthalmology, GRADE Reading Center, University of Bonn, Bonn, Germany; [5]Department of Ophthalmology, St. Elisabeth-Hospital, Koeln-Hohenlind, Germany; [6]Department of Ophthalmology, University of Münster Medical Center, Münster, Germany; [7]Department of Ophthalmology, University of Ulm, Ulm, Germany; [8]Department of Ophthalmology, University of Leipzig, Leipzig, Germany; [9]Department of Ophthalmology, Charité – Universitätsmedizin, Berlin, Germany; [10]Department of Ophthalmology, University of Surrey, Guildford, UK; [11]Department of Ophthalmology, Ludwig-Maximilians University, Munich, Germany; [12]Department of Ophthalmology, Medizinische Hochschule Hannover, Hannover, Germany

COMRADE-C: Visusverlauf (BCVA von Baseline)

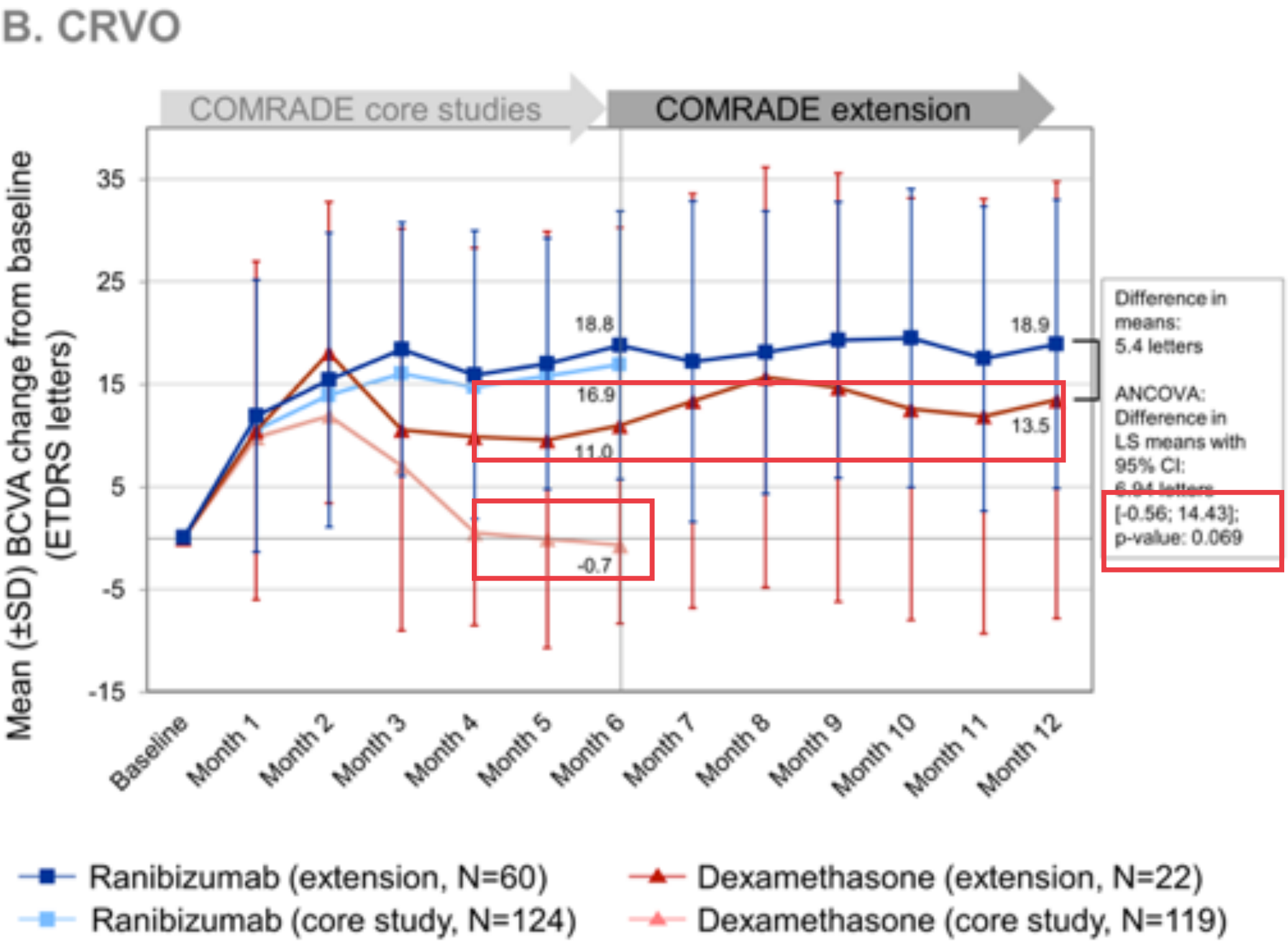


COMRADE-B und -Extension



Hattenbach LO, Feltgen N, Bertelmann T, Schmitz-Valckenberg S, Berk H, Eter N, Lang GE, Rehak M, Taylor SR, Wolf A, Weiss C, Paulus EM, Pielen A, Hoerauf H. Head-to-head comparison of ranibizumab PRN versus single-dose dexamethasone for branch retinal vein occlusion (COMRADE-B). COMRADE-B Study Group.. Acta Ophthalmol. 2017

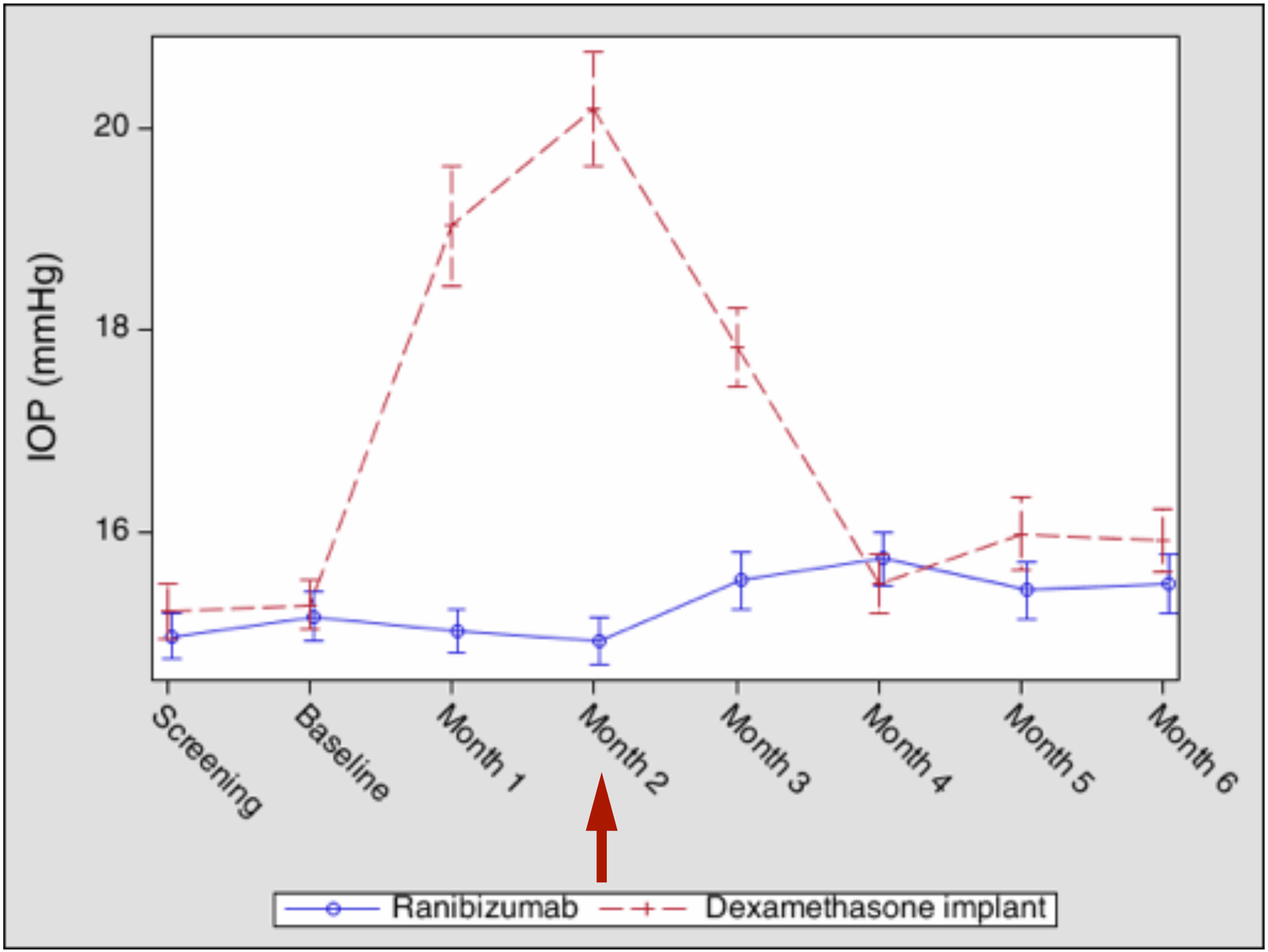
COMRADE-C Extension



Feltgen, Hattenbach et al. for the COMRADE Study Group 2016

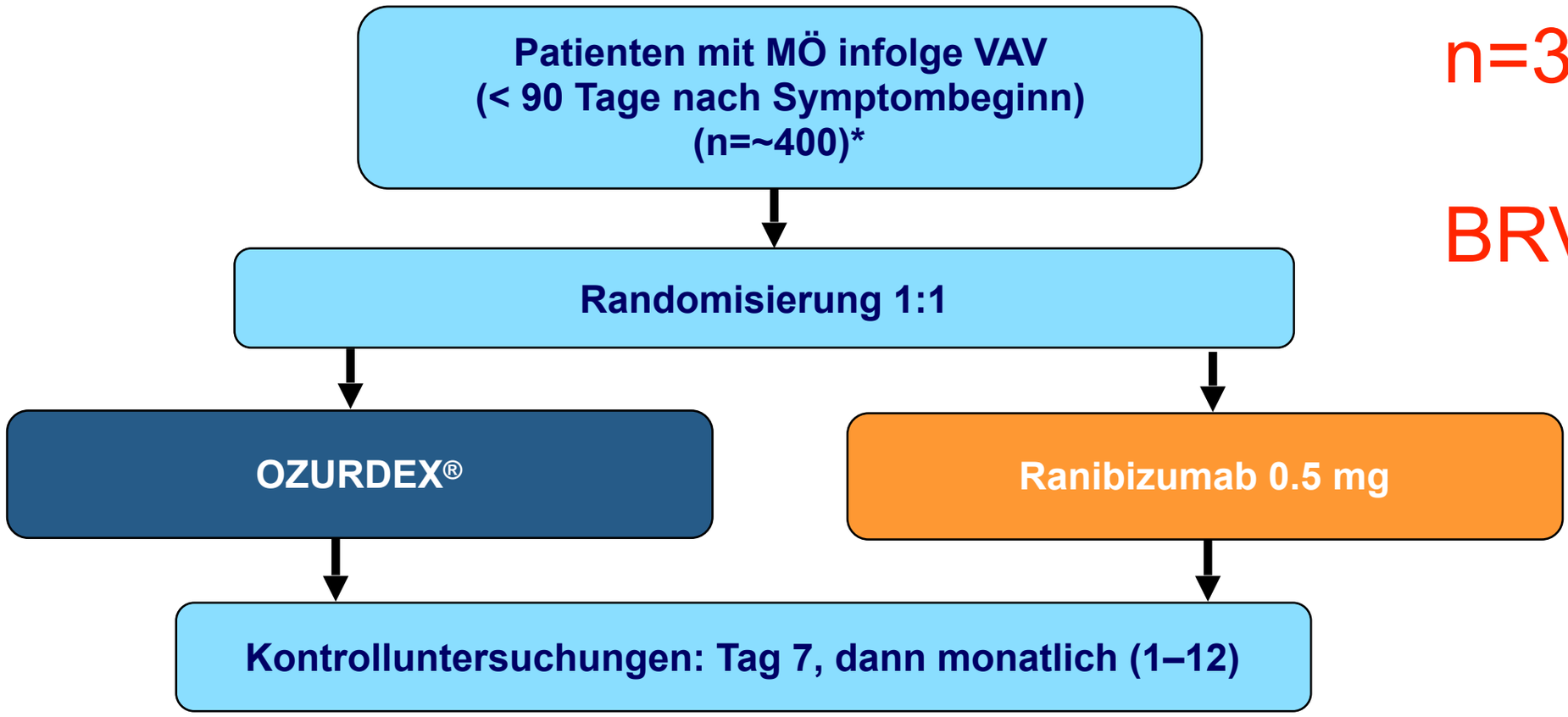
Nebenwirkung Tensioerhöhung: IOD- Verlauf

COMRADE
BRANCH RETINAL VEIN OCCLUSION



NOVARTIS

COmparison of Intravitreal Dexamethasone Implant and Ranibizumab for **M**acular Edema in BRV**O**



n=307

BRVO

Hypothese der Non-Inferiority Studie:
Die Effektivität von OZURDEX® ist der von Ranibizumab bei Patienten mit VAV hinsichtlich der durchschnittlichen Veränderung des BCVA an Monat 12 im Vergleich zur Baseline nicht unterlegen

*Studienzentren in Europa und Israel

Original Research Article

EJO European Journal of Ophthalmology

European Journal of Ophthalmology
1–4

SAGE

A 12-month, multicenter, parallel group comparison of dexamethasone intravitreal implant versus ranibizumab in branch retinal vein occlusion

Francesco Bandello[1], Albert Augustin[2], Adnan Tufail[3] and Richard Leaback[4]

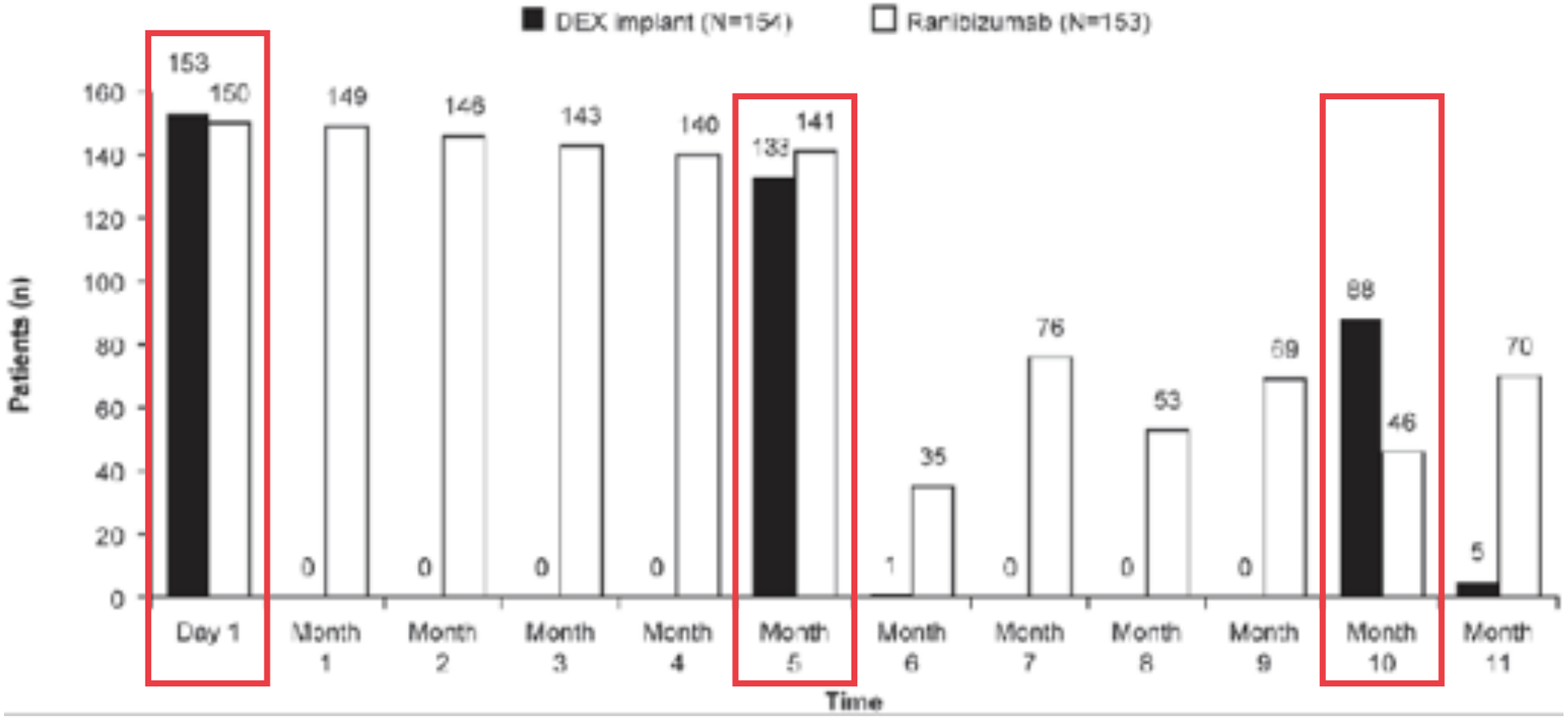


Figure 1. Number and distribution of study treatments administered over the study period.

DEX 2,5 vs. RAN 8 Injektionen (PRN ab Mon. 6!)

Original Research Article

EJO European Journal of Ophthalmology

European Journal of Ophthalmology
1–4

SAGE

A 12-month, multicenter, parallel group comparison of dexamethasone intravitreal implant versus ranibizumab in branch retinal vein occlusion

Francesco Bandello[1], Albert Augustin[2], Adnan Tufail[3] and Richard Leaback[4]

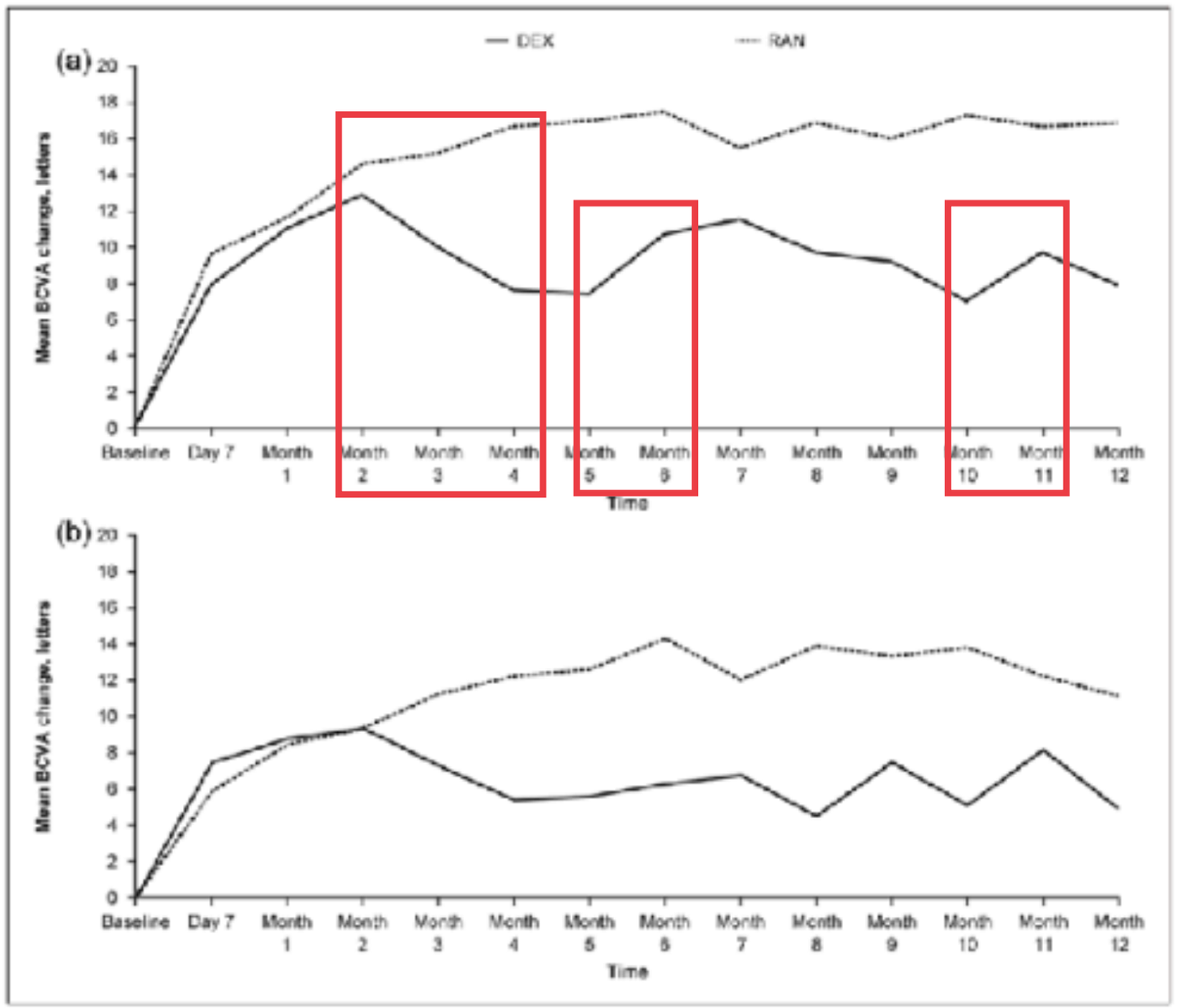


Figure 2. Mean change from baseline in BCVA (ETDRS letters) over 12 months: (a) overall ITT population (DEX implant, n = 153; ranibizumab, n = 153) and (b) pseudophakic eyes, ITT population (DEX implant, n = 26; ranibizumab, n = 27).

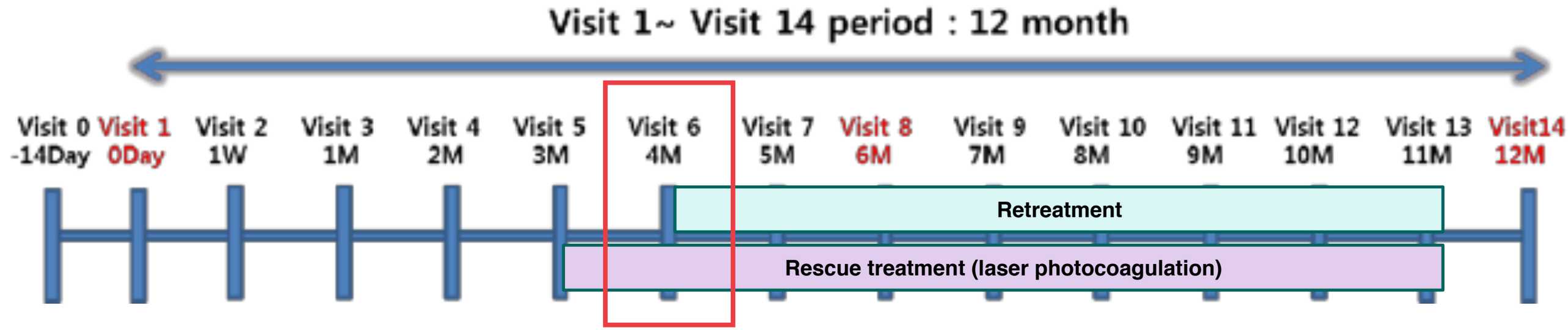
COBALT STUDY

A 12-Month, Open Label, Multicenter study to Assess the Safety and Efficacy of DEX implant Implant 700μg

(Dexamethasone) in the Treatment of Patients with Macular Edema associated with Branch Retinal Vein Occlusion at Korean clinical settings

INT/0398/2016
Date of Preparation: July 2016

Study design



- Baseline
- DEX implant injection

- 15 visits (Visit 0 – Visit 14)
- Up to two weeks of screening (Visit 0 – Visit 1)
- Visit 1 (baseline): DEX implant injection
- 12 months of follow-up (Visit 2 – Visit 14)
- Rescue therapy (laser) was allowed after 90 days from injection
- Retreatments of DEX implant were allowed with ≥4 month intervals

nicht-randomisiert !

Yoon YH, et al. Poster Presented at the Association for Research in Vision and Ophthalmology (ARVO) 2016 Annual Meeting, May 1–5, 2016; Seattle, WA, USA. D0066

Ophthalmologica

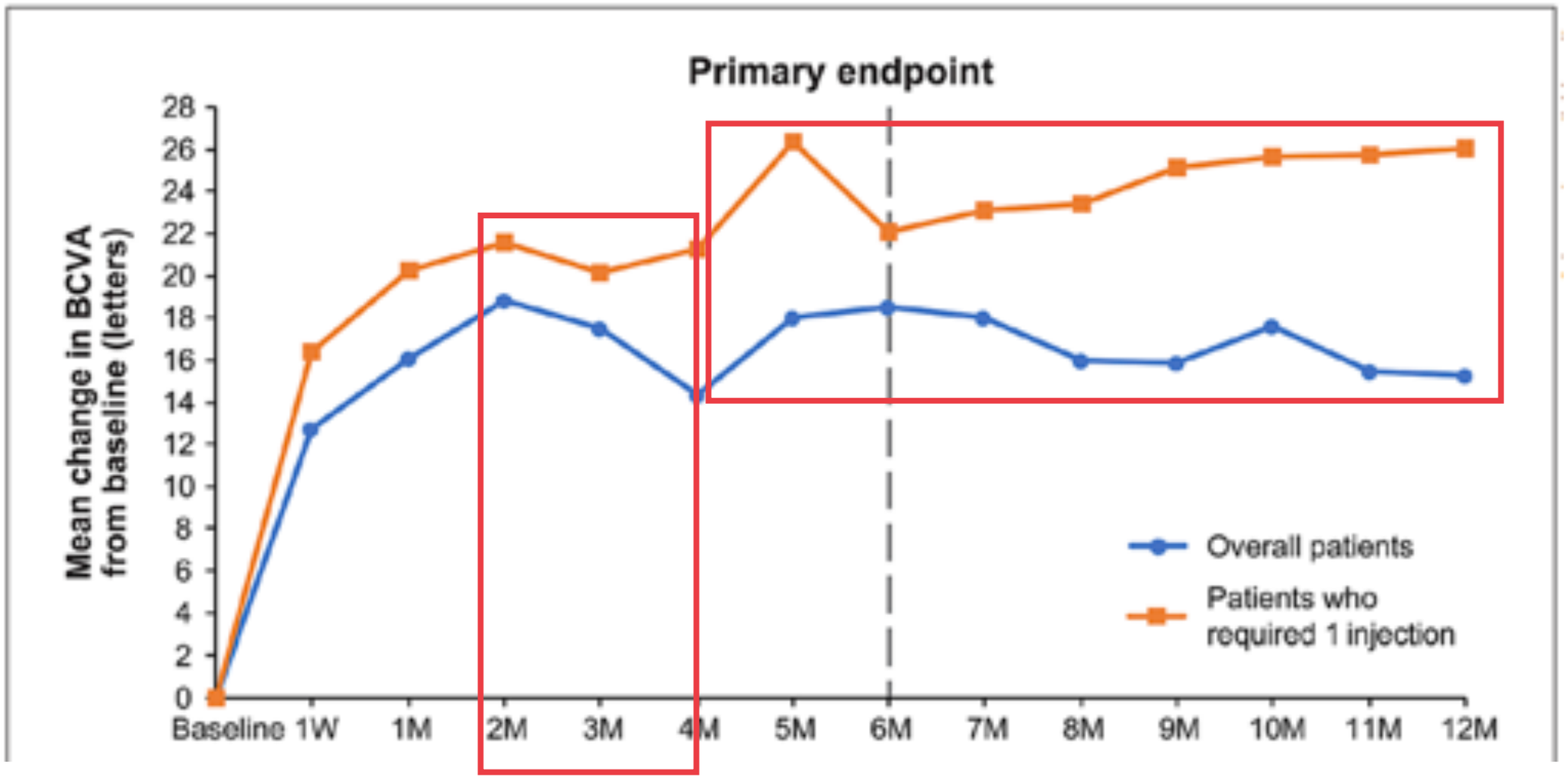
Research Article

Ophthalmologica
DOI: 10.1159/000486547

Received: November 22, 2017
Accepted after revision: February 5, 2018
Published online: April 11, 2018

Dexamethasone Intravitreal Implant for Early Treatment and Retreatment of Macular Edema Related to Branch Retinal Vein Occlusion: The Multicenter COBALT Study

Young Hee Yoon[a] Jong Woo Kim[b] Joo Yong Lee[c] In Taek Kim[c]
Se Woong Kang[d] Hyeong Gon Yu[e] Hyoung Jun Koh[f] Sung Soo Kim[f]
Dong-Jin Chang[g] Susan Simonyi[h]



"Single-shot patients"! = early long-term responders

Gao et al. BMC Ophthalmology (2019) 19:9
https://doi.org/10.1186/s12886-018-1016-7

BMC Ophthalmology

RESEARCH ARTICLE Open Access

Intravitreal dexamethasone implants versus intravitreal anti-VEGF treatment in treating patients with retinal vein occlusion: a meta-analysis

Lixiong Gao[1], Lijun Zhou[2], Chunyu Tian[1], Na Li[1], Weiyang Shao[1], Xiujun Peng[1] and Qian Shi[1]*

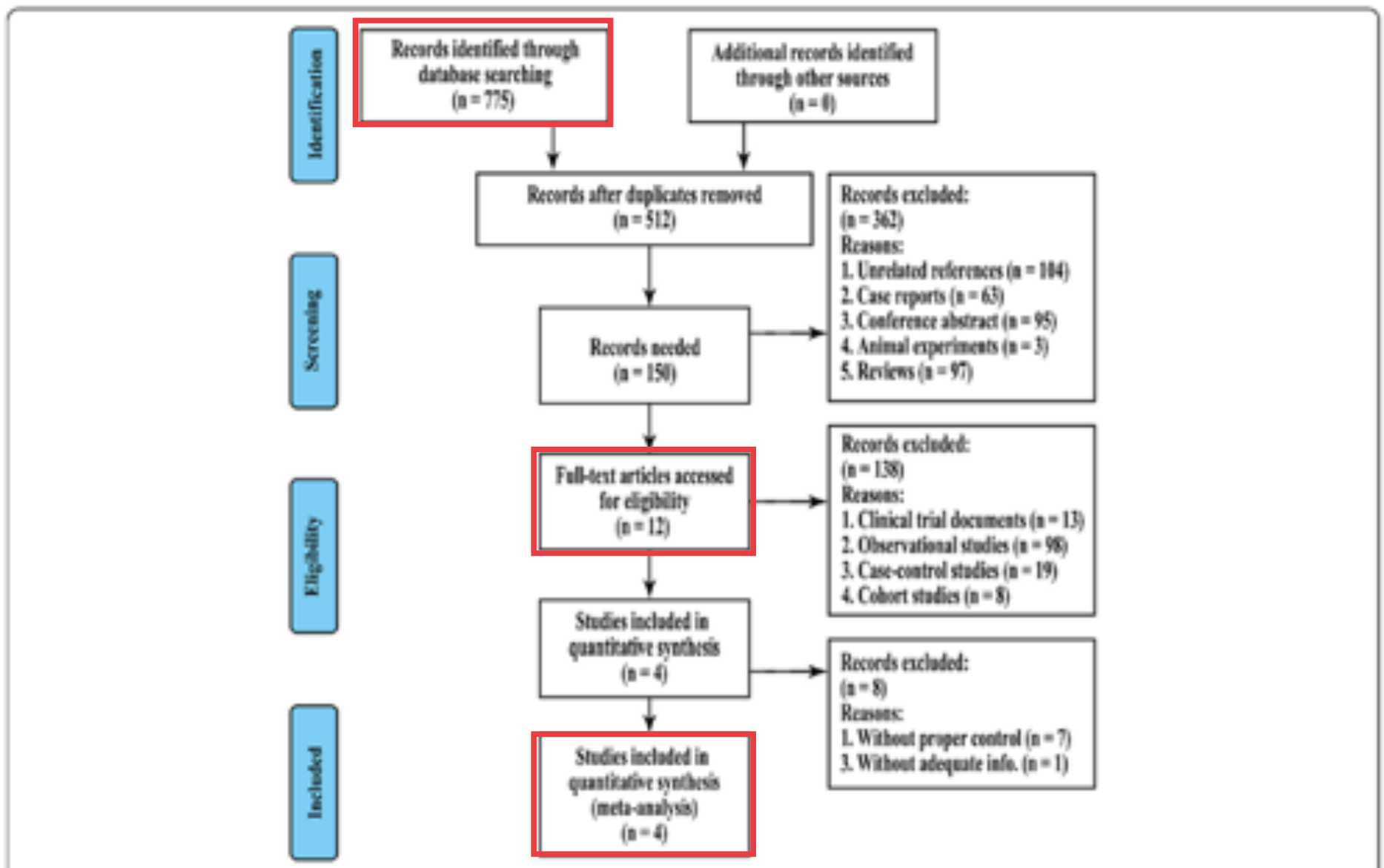


Fig. 1 Flow chart of the literature search

Gao et al. BMC Ophthalmology (2019) 19:9
https://doi.org/10.1186/s12886-018-1016-7

BMC Ophthalmology

RESEARCH ARTICLE Open Access

Intravitreal dexamethasone implants versus intravitreal anti-VEGF treatment in treating patients with retinal vein occlusion: a meta-analysis

Lixiong Gao[1], Lijun Zhou[2], Chunyu Tian[1], Na Li[1], Weiyang Shao[1], Xiujun Peng[1] and Qian Shi[1]*

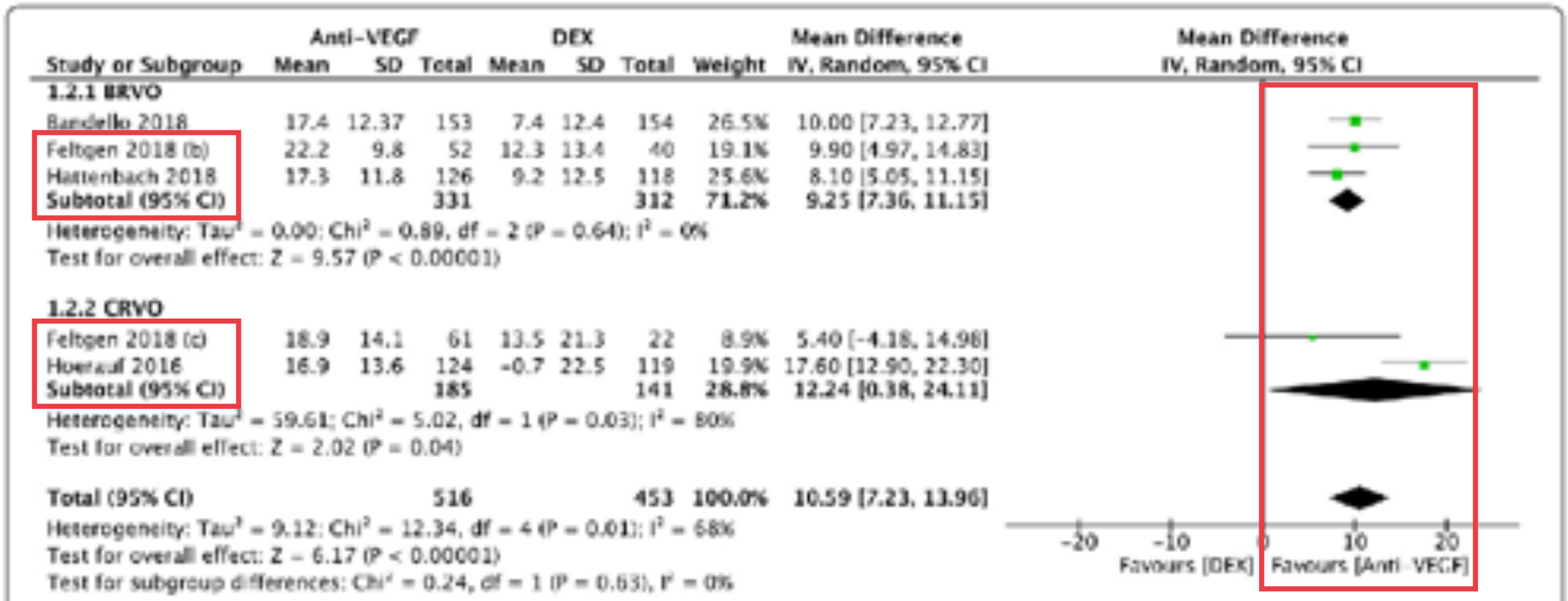


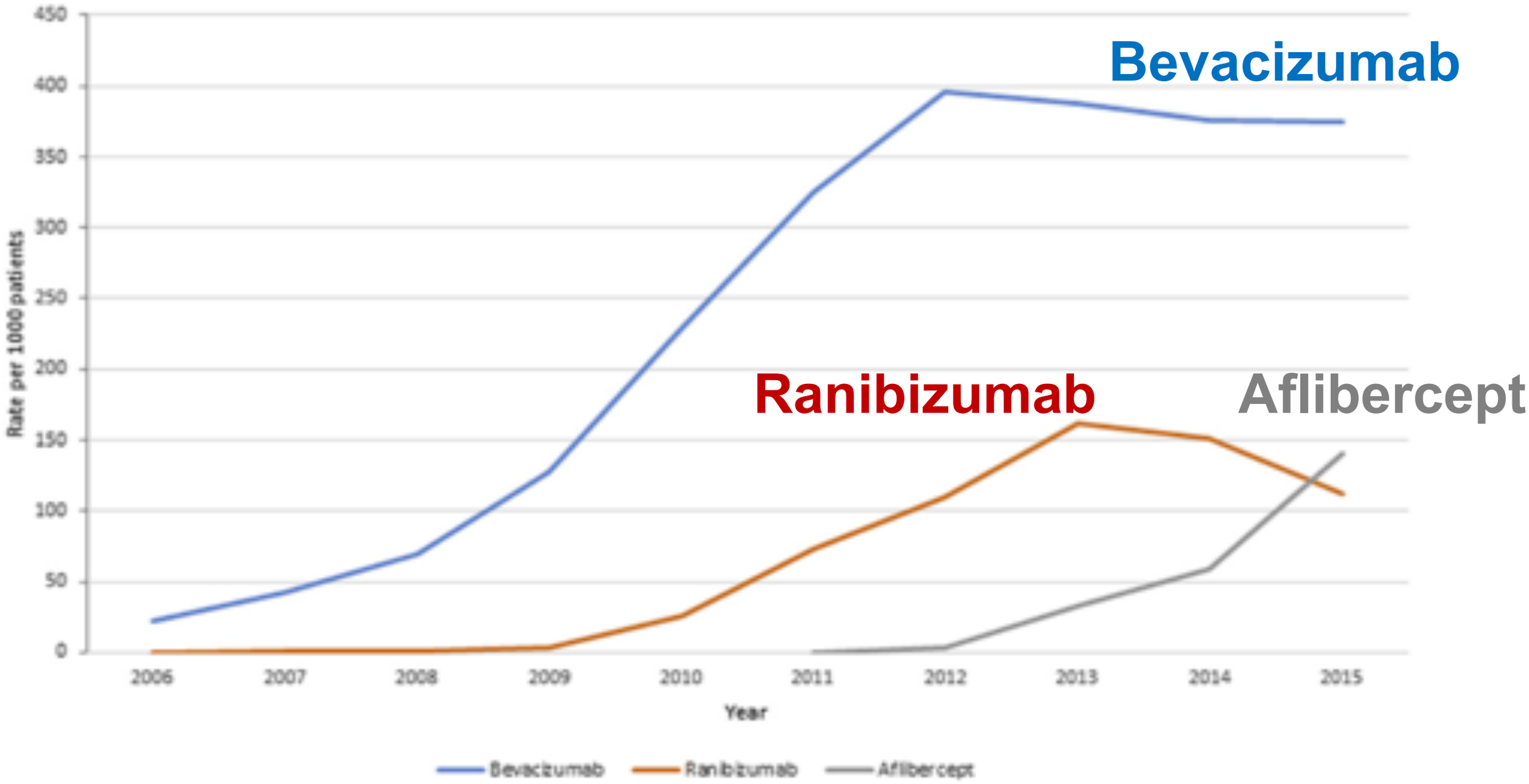
Fig. 3 A forest plot diagram comparing the main outcome of the DEX implant with the anti-VEGF treatment at the endpoint. The results present the mean BCVA changes in RVO and the subgroup analysis of BRVO and CRVO

*Stellungnahme RVO 2018

Welcher intravitreale Wirkstoff bei RVO?*

IVOM USA: On-Label vs. Off-Label

Parikh et al. Ophthalmology 2017;124:352-358



JAMA | Original Investigation

Effect of Bevacizumab vs Aflibercept on Visual Acuity Among Patients With Macular Edema Due to Central Retinal Vein Occlusion
The SCORE2 Randomized Clinical Trial

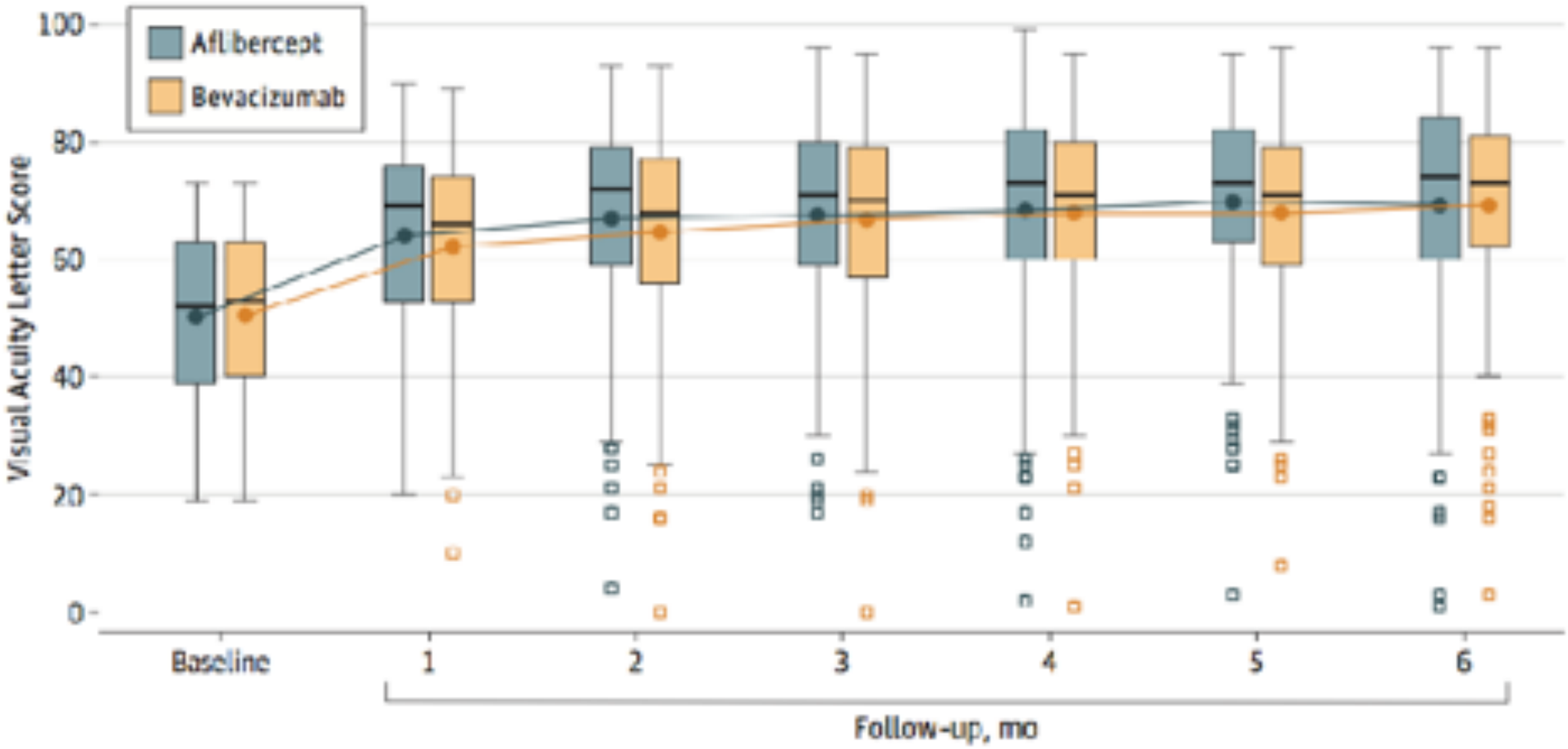
Ingrid U. Scott, MD, MPH; Paul C. VanVeldhuisen, PhD; Michael S. Ip, MD; Barbara A. Blodi, MD; Neal L. Oden, PhD; Carl C. Awh, MD; Derek Y. Kunimoto, MD; Dennis M. Marcus, MD; John J. Wroblewski, MD; Jacqueline King, MS; for the SCORE2 Investigator Group

Scott et al. 2017, JAMA, online

- Prospektiv, randomisiert
- 362 Patienten
- Aflibercept versus Bevacizumab
- ZVV/ Hemi-ZVV
- Monatliche IVOM bis Monat 6

Score2

Figure 2. Electronic Early Treatment Diabetic Retinopathy Study Visual Acuity Letter Score at Baseline and Monthly Through Month 6



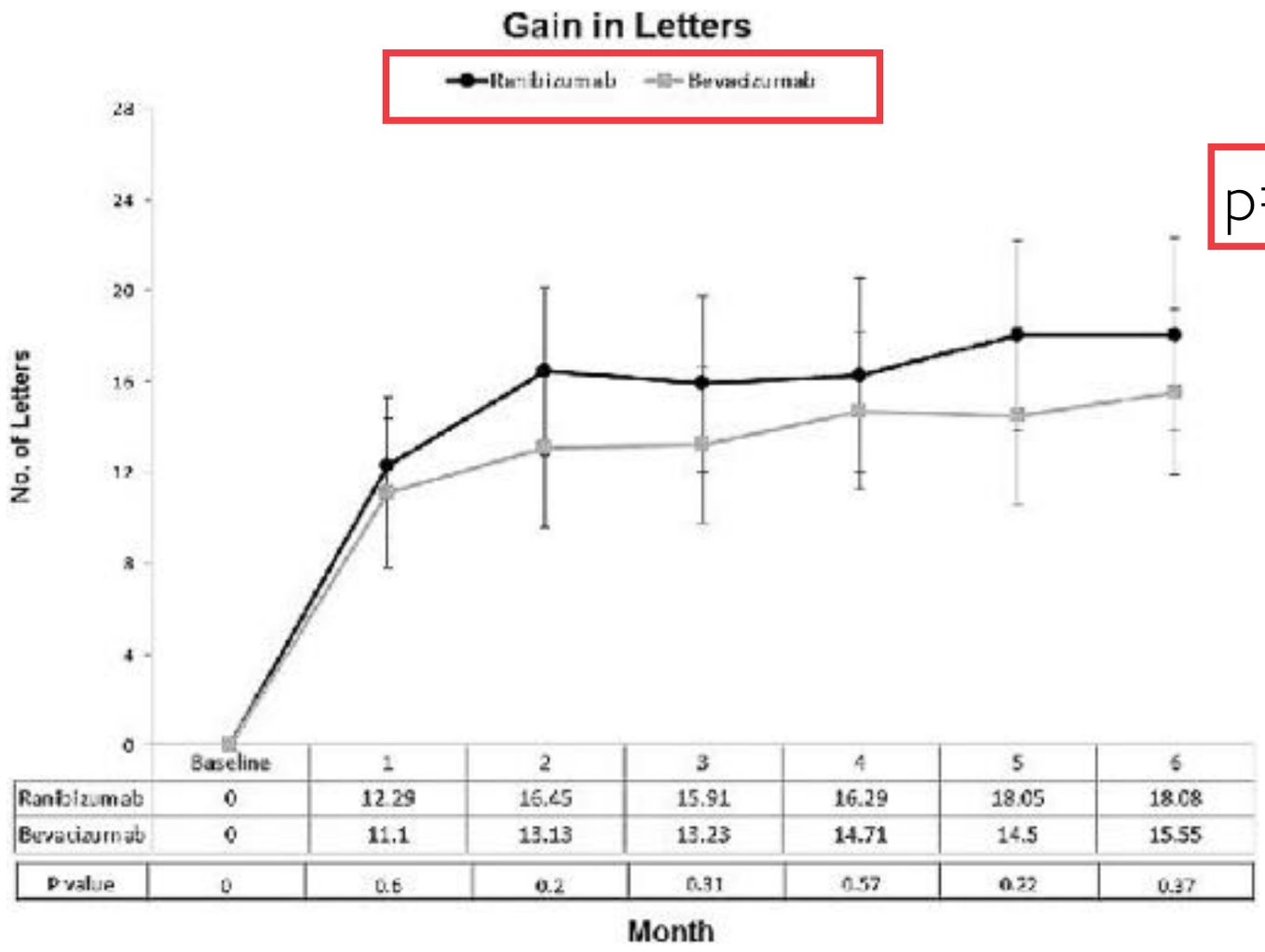
Eyes, No.							
Aflibercept	180	179	177	175	173	169	175
Bevacizumab	182	179	179	175	172	171	173

- Aflibercept: +18,3 Bst
- Bevacizumab: +18,9 Bst

A randomised, double-masked, controlled study of the efficacy and safety of intravitreal bevacizumab versus ranibizumab in the treatment of macular oedema due to branch retinal vein occlusion: MARVEL Report No. 1

Raja Narayanan, Bhavik Panchal, Taraprasad Das, Jay Chhablani, Subhadra Jalali, M Hasnat Ali, on behalf of MARVEL study group

- n=75
- 1:1 Randomis.
- 1 Injektion + PRN
- Visus, CRT 6 Monate



	Baseline	1	2	3	4	5	6
Ranibizumab	0	12.29	16.45	15.91	16.29	18.05	18.08
Bevacizumab	0	11.1	13.13	13.23	14.71	14.5	15.55
P value	0	0.6	0.2	0.31	0.57	0.22	0.37

p=0,74, n.s.

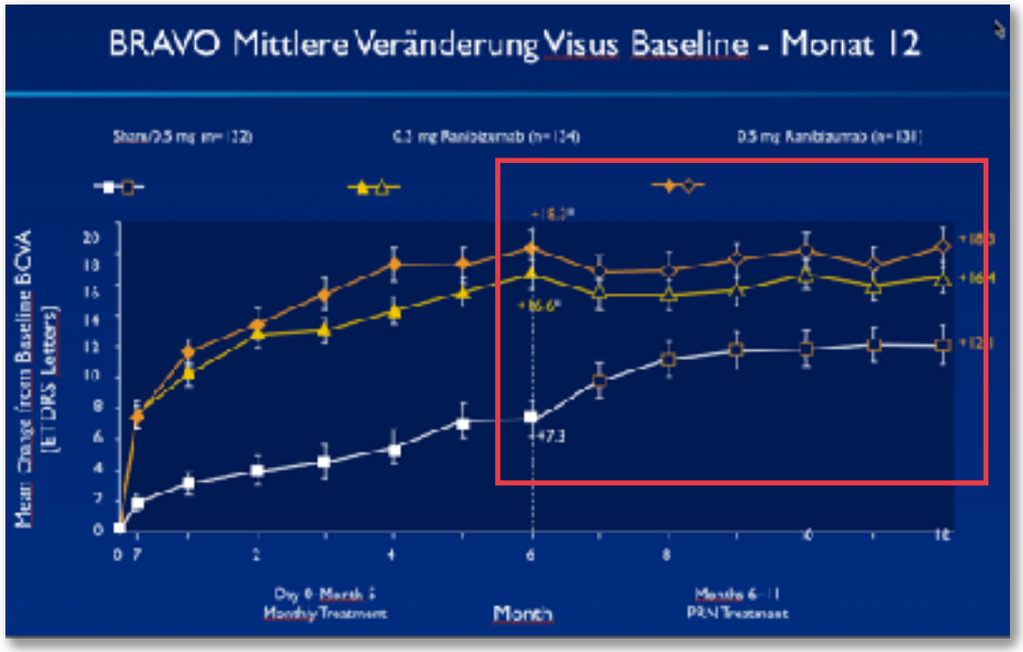
Narayanan R, *et al*. *Br J Ophthalmol* 2015;**99**:954–959. doi:10.1136/bjophthalmol-2014-306543

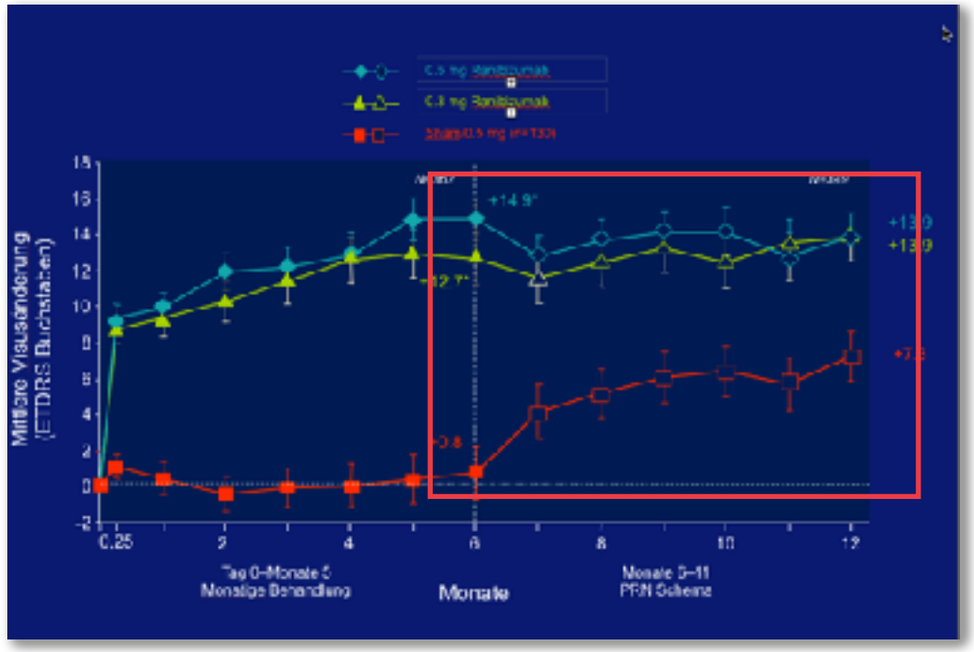
Anti-VEGF bei RVO: Gleiche Wirksamkeit der verfügbaren Substanzen !

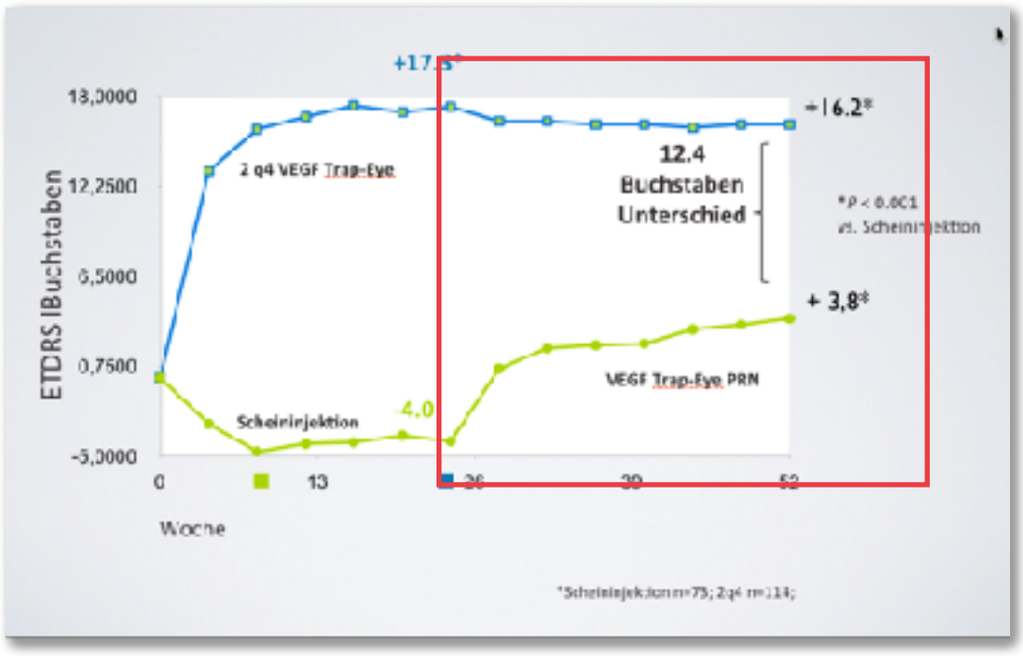
*Stellungnahme RVO 2018

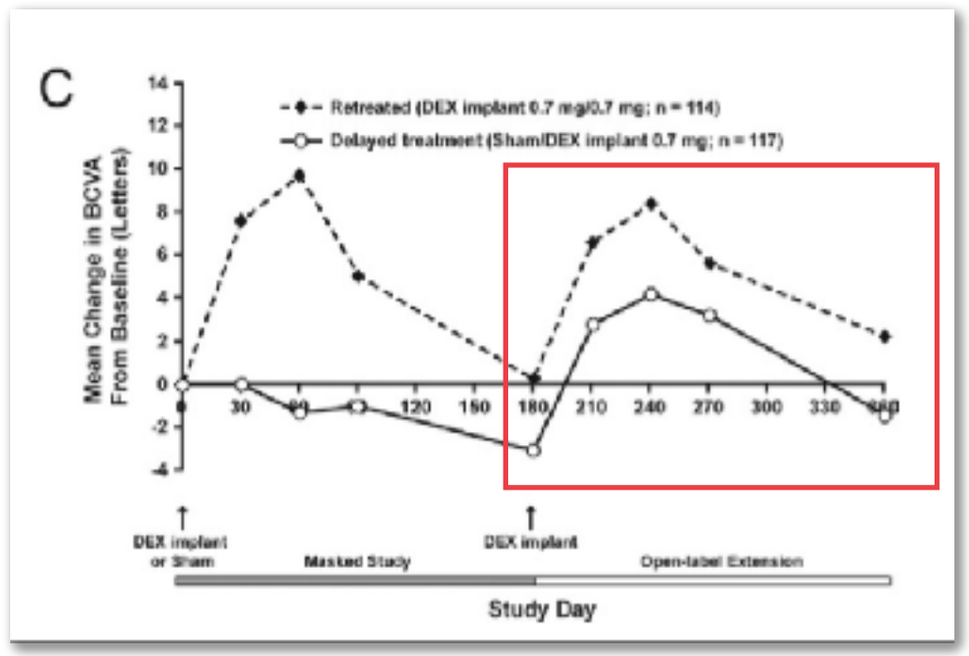
Welche Behandlungsstrategie?*

RVO: Je früher Therapiebeginn, desto erfolgreicher !

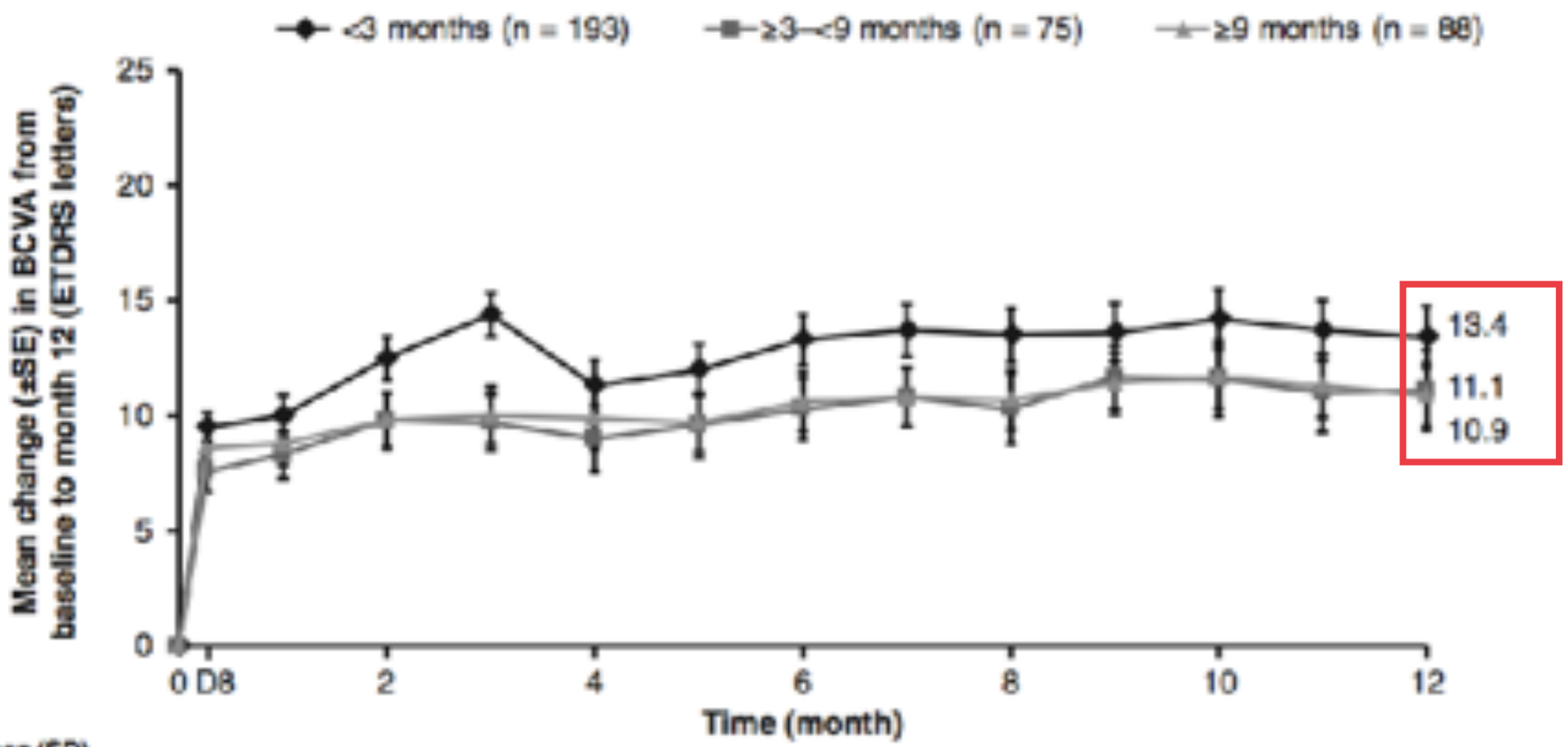








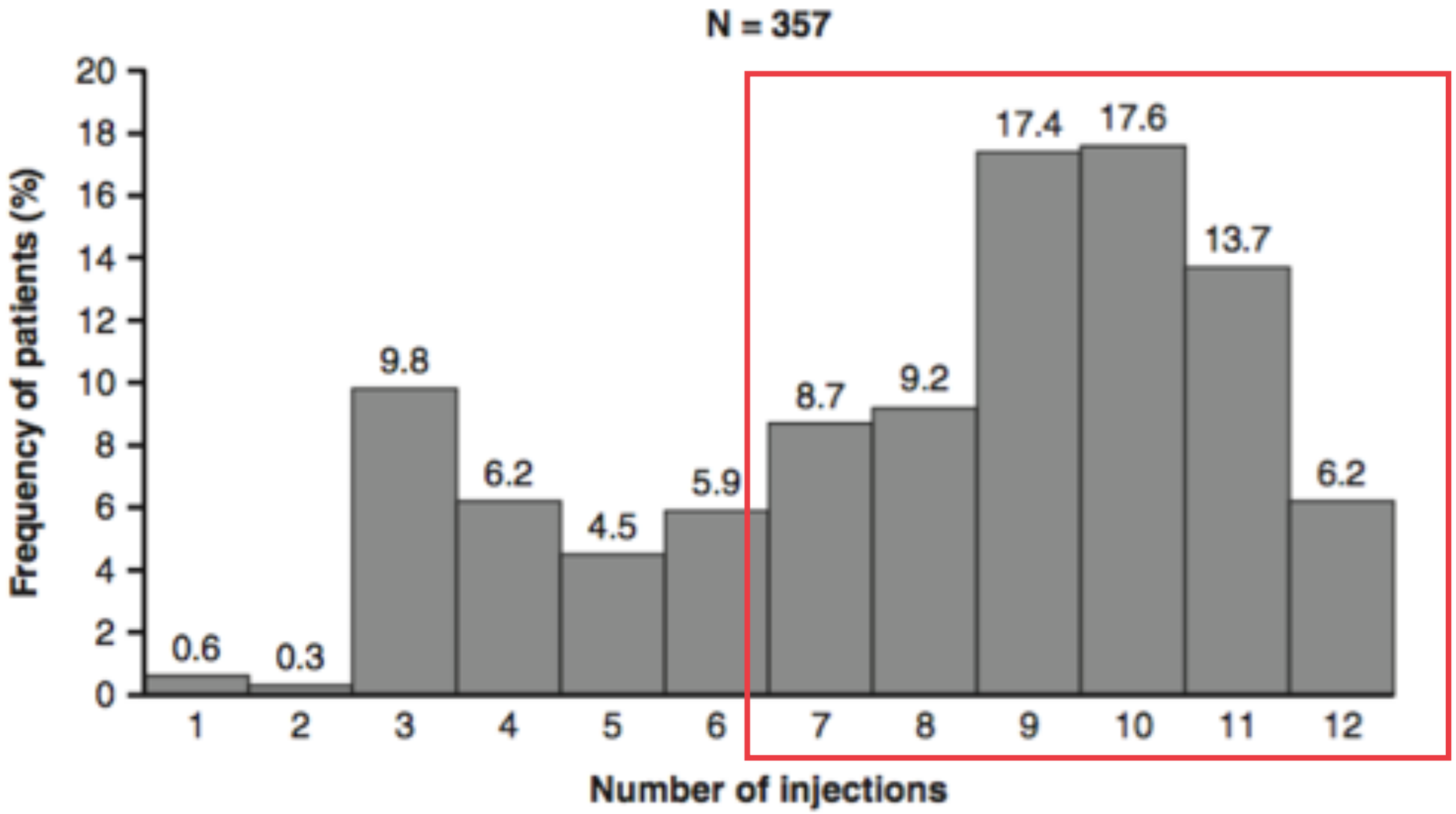
CRYSTAL: Frühe vs. späte Therapie



Mean (SD) BCVA letters (absolute value)	Baseline	Day 8	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
< 3 months	54.0 (14.90)	63.5 (15.13)	64.0 (16.99)	66.6 (16.86)	66.4 (16.78)	65.3 (16.40)	66.0 (16.53)	67.4 (16.29)	67.7 (16.93)	67.6 (16.80)	67.7 (19.59)	68.2 (19.36)	67.7 (19.67)	67.4 (20.56)
≥ 3–<9 months	59.0 (16.52)	58.4 (18.16)	59.1 (18.06)	60.7 (18.63)	60.5 (19.61)	59.8 (19.40)	60.6 (20.47)	61.2 (20.07)	61.7 (18.42)	61.1 (20.95)	62.5 (19.62)	62.5 (19.97)	61.8 (20.54)	62.0 (20.56)
≥ 9 months	52.4 (13.86)	60.9 (14.92)	61.1 (16.43)	62.2 (17.71)	62.3 (18.06)	62.3 (18.00)	62.1 (17.38)	63.0 (18.15)	63.2 (18.37)	63.1 (18.09)	63.6 (18.54)	64.0 (17.63)	63.6 (18.45)	63.2 (18.14)

CRYSTAL: Injektionshäufigkeit

62,8% >6 Injektionen, Mittel 8,1



Stellungnahme RVO 2018

In den vergangenen Jahren hat die Frage nach der wirksamsten Behandlungsstrategie die Frage nach der effektivsten Substanz zunehmend verdrängt. Ursache hierfür sind die ernüchternden Ergebnisse aus den Real-Life-Studien (siehe Punkt 4), die klar belegen, dass die im klinischen Alltag erzielten Erfolge weit hinter den Ergebnissen der Zulassungsstudien zurückbleiben. Ursache dafür ist eine nicht konsequent umgesetzte Behandlung, die Gründe sind zahlreich.

Daraus ergibt sich die Forderung, dass eine moderne IVOM-Strategie eine hohe Patientenadhärenz einerseits, aber auch ein Maximum an Sicherheit und IVOM-Anzahl andererseits abbilden muss. Die Daten aus Tabelle 1 zeigen ein einheitliches Bild: obwohl unterschiedlichste Injektionsstrategien verwendet wurden, konnten überdurchschnittliche Ergebnisse immer nur dann erreicht werden, wenn die mittlere Injektionszahl im ersten Jahr ca. 9 betrug (Spanne von 7,1-11,8). Dann wurde bei min-

RANIBIZUMAB FOR MACULAR EDEMA AFTER BRANCH RETINAL VEIN OCCLUSION

One Initial Injection Versus Three Monthly Injections

YUKO MIWA, MD,* YUKI MURAOKA, MD, PhD,* RIE OSAKA, MD,† SOTARO OOTO, MD, PhD,* TOMOAKI MURAKAMI, MD, PhD,* KIYOSHI SUZUMA, MD, PhD,* AYAKO TAKAHASHI, MD,* YUTO IIDA, MD,* NAGAHISA YOSHIMURA, MD, PhD,* AKITAKA TSUJIKAWA, MD, PhD†

Purpose: To compare the 12-month-efficacy of 1 initial intravitreal ranibizumab injection (IVR) followed by pro re nata (PRN) dosing with that of three initial monthly IVR followed by PRN dosing in patients with macular edema (ME) after branch retinal vein occlusion.

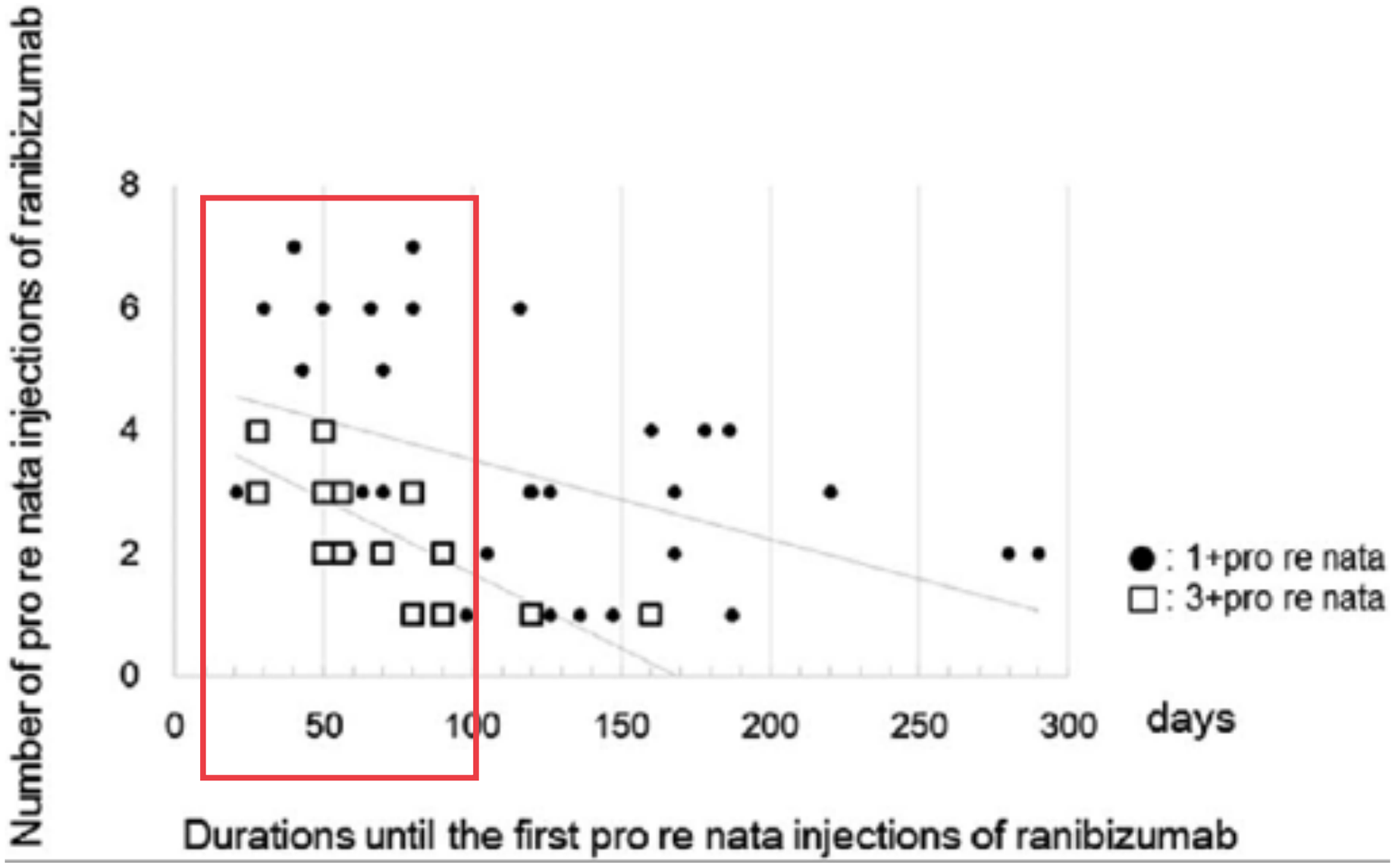
Design: Prospective, interventional study.

Methods: Of 81 eyes, 42 received 1 initial IVR injection (1+PRN group) and 39 eyes received 3 monthly IVRs (3+PRN). Pro re nata injections were performed when fovea exudative changes were evident.

Results: At Month 12, the visual acuity (VA) changes from baseline were −0.245 ± 0.227 and −0.287 ± 0.222, in the 1+PRN and 3+PRN groups, respectively; there were no significant difference between groups ($P = 0.728$). The stratified analysis showed that patients with better VA (baseline VA >20/40) had similar significant improvement in VA at Month 12 ($P < 0.001$) to that of those with poorer VA (≤20/40). Better VA at Month 12 was significantly associated with younger age, better baseline VA, and thinner baseline central foveal thickness ($P = 0.003$, < 0.001, and < 0.001, respectively). Mean total number of IVR injections in the 1+PRN and 3+PRN groups were 3.8 ± 1.8 and 4.6 ± 1.4, respectively ($P = 0.060$). In both groups, shorter durations to the first PRN injection were associated with greater total PRN injection number (1+PRN, $P = 0.006$; 3+PRN; group, $P < 0.001$).

Conclusion: In IVR treatment for ME after branch retinal vein occlusion, 1+PRN and 3+PRN regimens achieved similar 12-month functional outcomes. Patients with shorter durations to initial PRN injection may require more PRN treatments.

RETINA 0:1–8, 2016



Anti-VEGF (Ranibizumab) PRN:

Frühe Wiederbehandlung = Indikator für häufige Injektionen

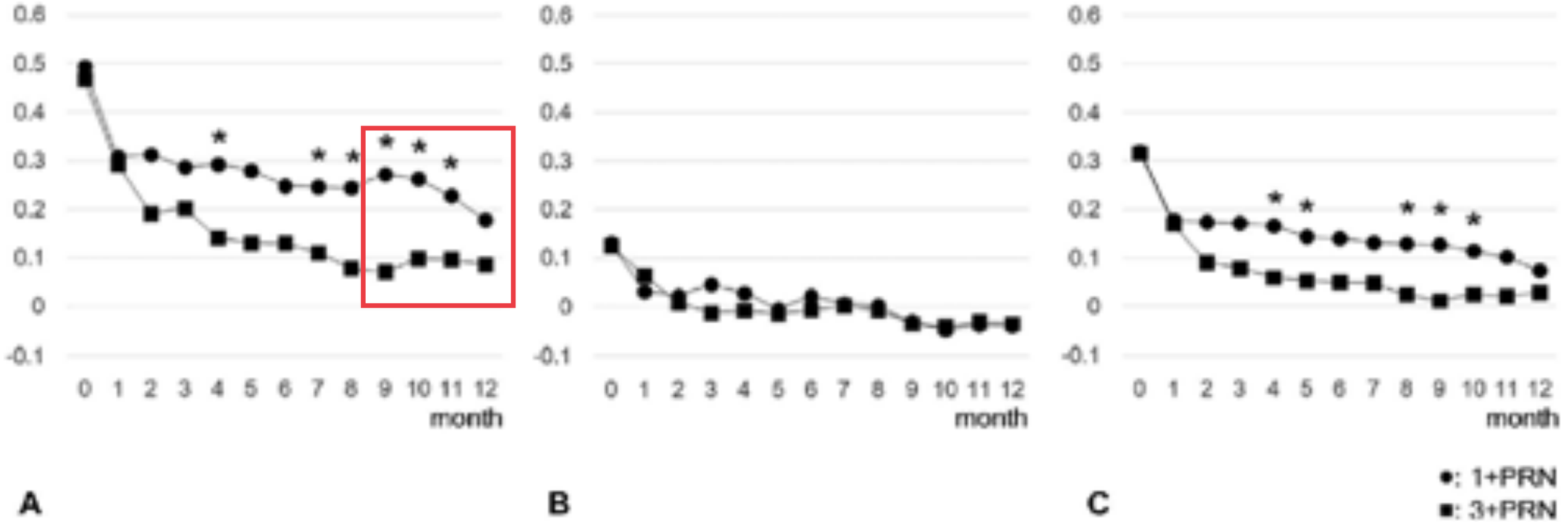


Fig. 4. Longitudinal changes in LogMAR visual acuity (VA) in the poorer VA subgroup (patients with a baseline Snellen equivalent of ≤20/40, [**A**]), in the better VA subgroup (patients with a baseline Snellen equivalent of >20/40, [**B**]), and in the total patient group (**C**). Mean baseline VA was 0.481 ± 0.210 (Snellen 20/61) in the poorer VA subgroup and 0.129 ± 0.091 (Snellen 20/27) in the better VA subgroup, both of these values improved to 0.135 ± 0.221 (Snellen 20/27) and −0.036 ± 0.115 at Month 12 in the poorer and better VA subgroup, respectively ($P < 0.001$ for both, compared with baseline). Comparisons of the 12-month outcomes between the 1+pro re nata (PRN) and 3+PRN groups show there were no significant difference in final VA (0.179 ± 0.257 [20/30] vs. 0.086 ± 0.166 [Snellen 20/24], $P = 0.178$) at Month 12 in the poorer VA subgroup. However, during the course of the 12-month observation period, the VA tended to be worse in the 1+PRN group than in the 3+PRN group. In contrast, in the better VA subgroup, VA longitudinally changed in relatively similar manner in both the 1+PRN and 3+PRN groups; there were no significant differences between groups over the entire observation.

Anti-VEGF (Ranibizumab) PRN: Je fortgeschritterer RVO, desto intensiver !

Stellungnahme RVO 2018

• Im Anschluss an zwei initiale 3er Serien mit anti-VEGF-Präparaten kann für eine Weiterbehandlung alternativ zum Pro-Re-nata (PRN)-Schema das Treat-and-Extend (T&E) oder das Observe-and-Plan (O&P) Schema angewendet werden, auch wenn für die beiden letztgenannten Schemata nur Expertenempfehlungen, aber keine Evidenz existiert.	⇔

JAMA Ophthalmology
View Article

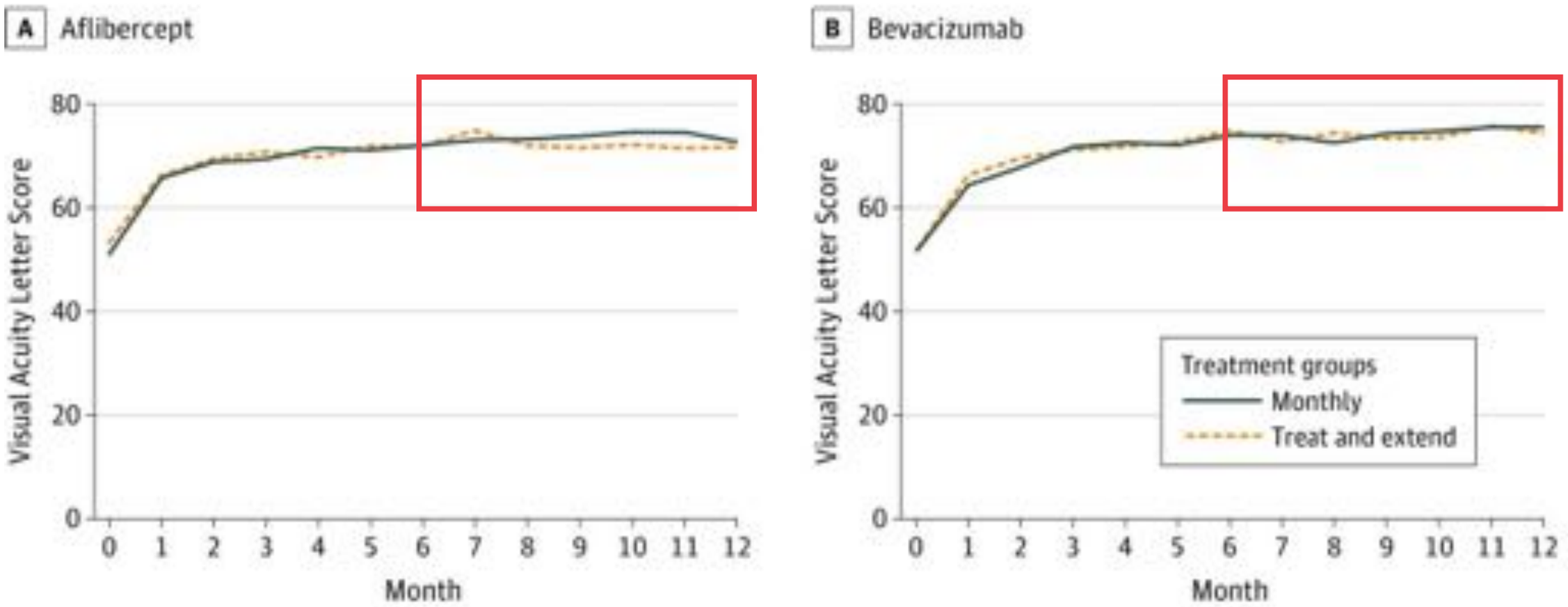
JAMA Ophthalmol. 2018 Apr; 136(4): 337–345.
Published online 2018 Feb 24.
doi: 10.1001/jamaophthalmol.2017.6843; 10.1001/jamaophthalmol.2017.6843

PMCID: PMC5876862
PMID: 29476587

Comparison of Monthly vs Treat-and-Extend Regimens for Individuals With Macular Edema Who Respond Well to Anti–Vascular Endothelial Growth Factor Medications

Secondary Outcomes From the SCORE2 Randomized Clinical Trial

Ingrid U. Scott, MD, MPH,[1,2] Paul C. VanVeldhuisen, PhD,[2,3] Michael S. Ip, MD,[4] Barbara A. Blodi, MD,[5] Neal L. Oden, PhD,[3] Michael Altaweel, MD,[5] and Daniel M. Gerstein, MD[7], for the SCORE2 Investigator Group



Anti-VEGF-Responder SCORE2, randomisiert T&E ab Monat 6

JAMA Ophthalmology
View Article

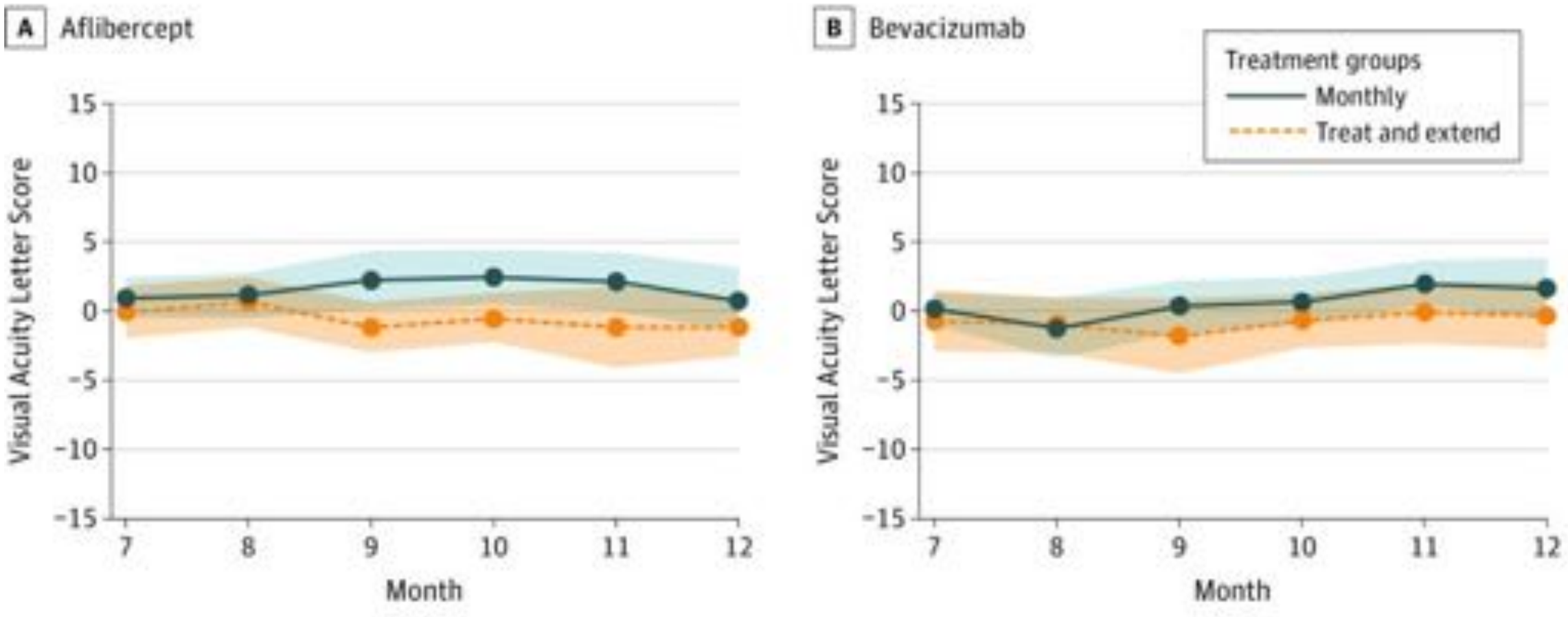
JAMA Ophthalmol. 2018 Apr; 136(4): 337–345.
Published online 2018 Feb 24.
doi: 10.1001/jamaophthalmol.2017.6843; 10.1001/jamaophthalmol.2017.6843

PMCID: PMC5876862
PMID: 29476587

Comparison of Monthly vs Treat-and-Extend Regimens for Individuals With Macular Edema Who Respond Well to Anti–Vascular Endothelial Growth Factor Medications

Secondary Outcomes From the SCORE2 Randomized Clinical Trial

Ingrid U. Scott, MD, MPH,[1,2] Paul C. VanVeldhuisen, PhD,[2,3] Michael S. Ip, MD,[4] Barbara A. Blodi, MD,[5] Neal L. Oden, PhD,[3] Michael Altaweel, MD,[5] and Daniel M. Gerstein, MD[7], for the SCORE2 Investigator Group



Nach 12 Monaten kein signifikanter Unterschied !

TREAT-AND-EXTEND REGIMENS WITH ANTI-VEGF AGENTS IN RETINAL DISEASES

A Literature Review and Consensus Recommendations

K. BAILEY FREUND, MD,* JEAN-FRANÇOIS KOROBELNIK, MD,† ROBERT DEVENYI, MD, FCSCS, FACS,‡ CARSTEN FRAMME, MD, MBA,§ JOHN GALIC, MD,¶ EDWARD HERBERT, FRCOphth,** HANS HOERAUF, MD,†† PAOLO LANZETTA, MD,‡‡ STEPHAN MICHELS, MD, MBA,§§ PAUL MITCHELL, MD, PhD,¶¶ JORDI MONÉS, MD, PhD,*** CARL REGILLO, MD,††† RAMIN TADAYONI, MD, PhD,‡‡‡ JAMES TALKS, MRCP, FRCOphth,§§§ SEBASTIAN WOLF, MD, PhD¶¶¶

Table 6. Advantages and Disadvantages of TER Over PRN

Advantages	Disadvantages
Fewer recurrences	Overtreatment/may inject eye with a dry retina and achieve no VA change
Better long-term vision outcomes	Does not identify the patient who may remain stable without treatment (particularly for DME and RVO)
More likely to keep retina dry	Potentially greater risk of geographical atrophy
Less patient visits	Increased chance of getting an adverse event
More proactive	Limited evidence
Guarantee of some injections	No stop criteria in DME and RVO
Reduced risk of hemorrhage	
Adherence, logistics, costs	
Better disease control/stability	
Individualized to patient	
More predictable injection workload	

DME, diabetic macular edema; PRN, pro re nata; RVO, retinal vein occlusion; TER, treat-and-extend; VA, visual acuity.

Acta Ophthalmologica

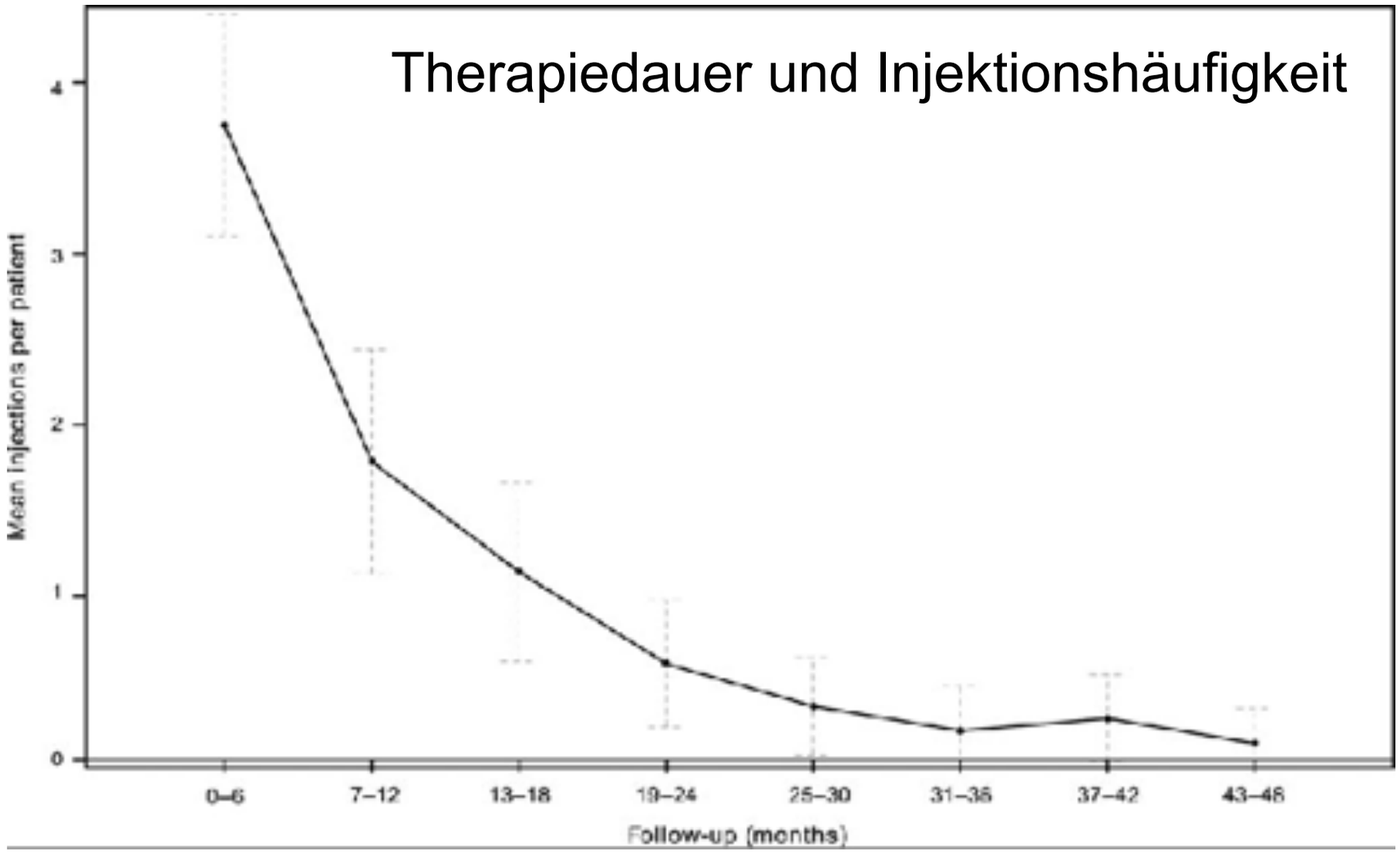
Acta Ophthalmologica 2015

Anti-VEGF treatment in branch retinal vein occlusion: a real-world experience over 4 years

Sandra Rezar, Katharina Eibenberger, Wolf Bühl, Michael Georgopoulos, Ursula Schmidt-Erfurth and Stefan Sacu on behalf of Macula Study Group Vienna

Department of Ophthalmology, Medical University of Vienna, Vienna, Austria

Therapiedauer und Injektionshäufigkeit



Nach 4 Jahren nur in 2/28 Fällen Weiterbehandlung erforderlich !

Stellungnahme RVO 2018

Patienten zwischen 4 und 19% (25,29,30). Das empfohlene Schema berücksichtigt zudem den Umstand, dass auch bei aller Sorgfalt initial gestellte Diagnosen falsch sein können (auf Grund starker Blutungen anderer Ursache z.B. Makroaneurysmaruptur anstatt eines VAV) oder ein Abbruchkriterium bzw. fehlendes Ansprechen, bei dem ein Präparatewechsel zu erwägen wäre, vorliegen könnte.

„Switching“

Ophthalmologica

Original Paper

Ophthalmologica 2017;238:110–116
DOI: 10.1159/000473864

Received: January 25, 2017
Accepted after revision: March 28, 2017
Published online: May 24, 2017

Comparison of Intravitreal Ranibizumab, Aflibercept, and Dexamethasone Implant after Bevacizumab Failure in Macular Edema Secondary to Retinal Vascular Occlusions

Joel Hanhart Yaacov Rozenman

Department of Ophthalmology, Shaare Zedek Medical Center, Jerusalem, Israel

3 -12 bevacizumab injections delivered over 3 -15 months average interval between injections 1 to 1.4 months

Table 2. Visual and anatomic outcomes (mean ± SD)

	Before switch	12 months after switch	*p* value
Ranibizumab			
CMT	431.67±96.84	300.07±52.04	<0.001
VA	0.35±0.19	0.49±0.26	<0.001
Aflibercept			
CMT	425.33±85.26	280.67±41.62	<0.001
VA	0.39±0.22	0.51±0.30	<0.05
Dexamethasone implant			
CMT	433.50±98.77	293.00±33.00	<0.001
VA	0.34±0.19	0.51±0.26	<0.01

Ophthalmologica

Original Paper

Ophthalmologica 2017;238:110–118
DOI: 10.1159/000473864

Received: January 25, 2017
Accepted after revision: March 28, 2017
Published online: May 24, 2017

Comparison of Intravitreal Ranibizumab, Aflibercept, and Dexamethasone Implant after Bevacizumab Failure in Macular Edema Secondary to Retinal Vascular Occlusions

Joel Hanhart Yaacov Rozenman

Department of Ophthalmology, Shaare Zedek Medical Center, Jerusalem, Israel

Visusgewinn nach Switching in 60% !

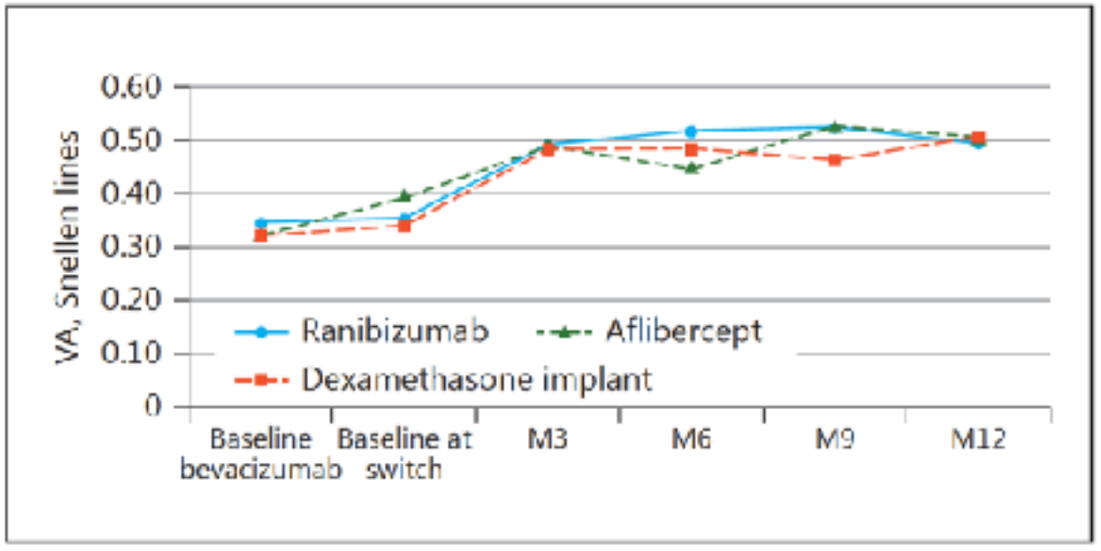


Fig. 2. Functional response to bevacizumab and second-line agents.

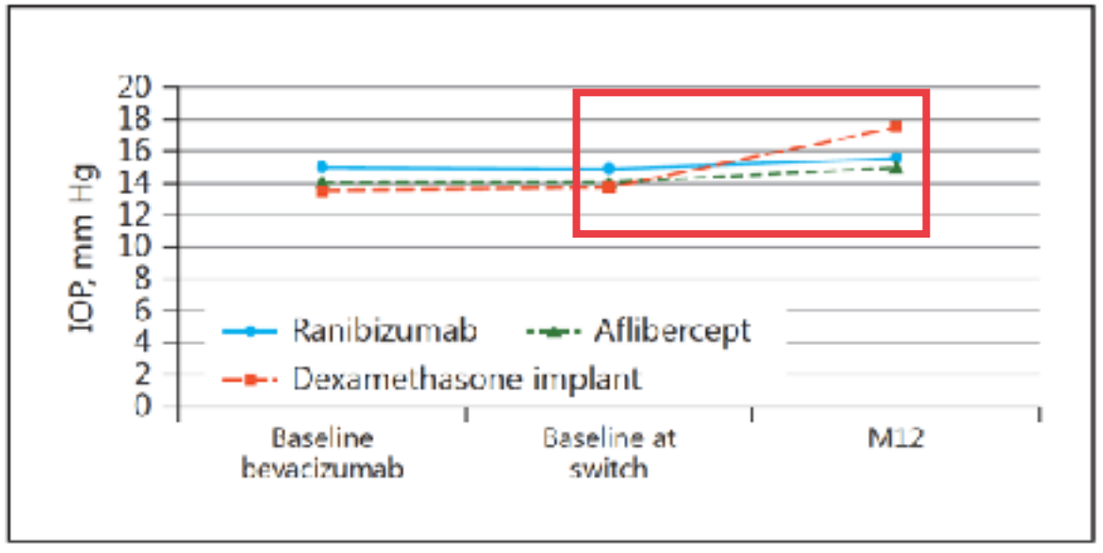
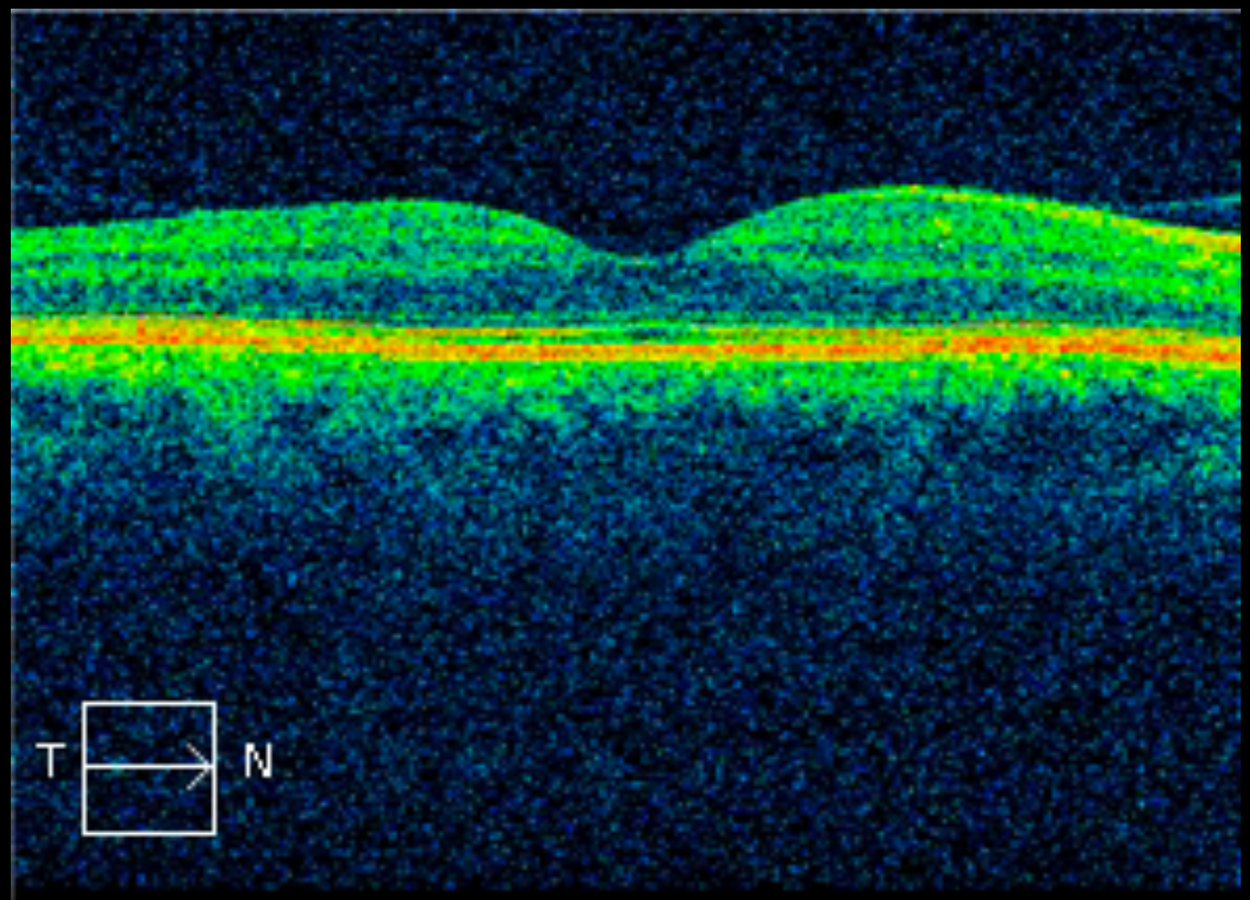
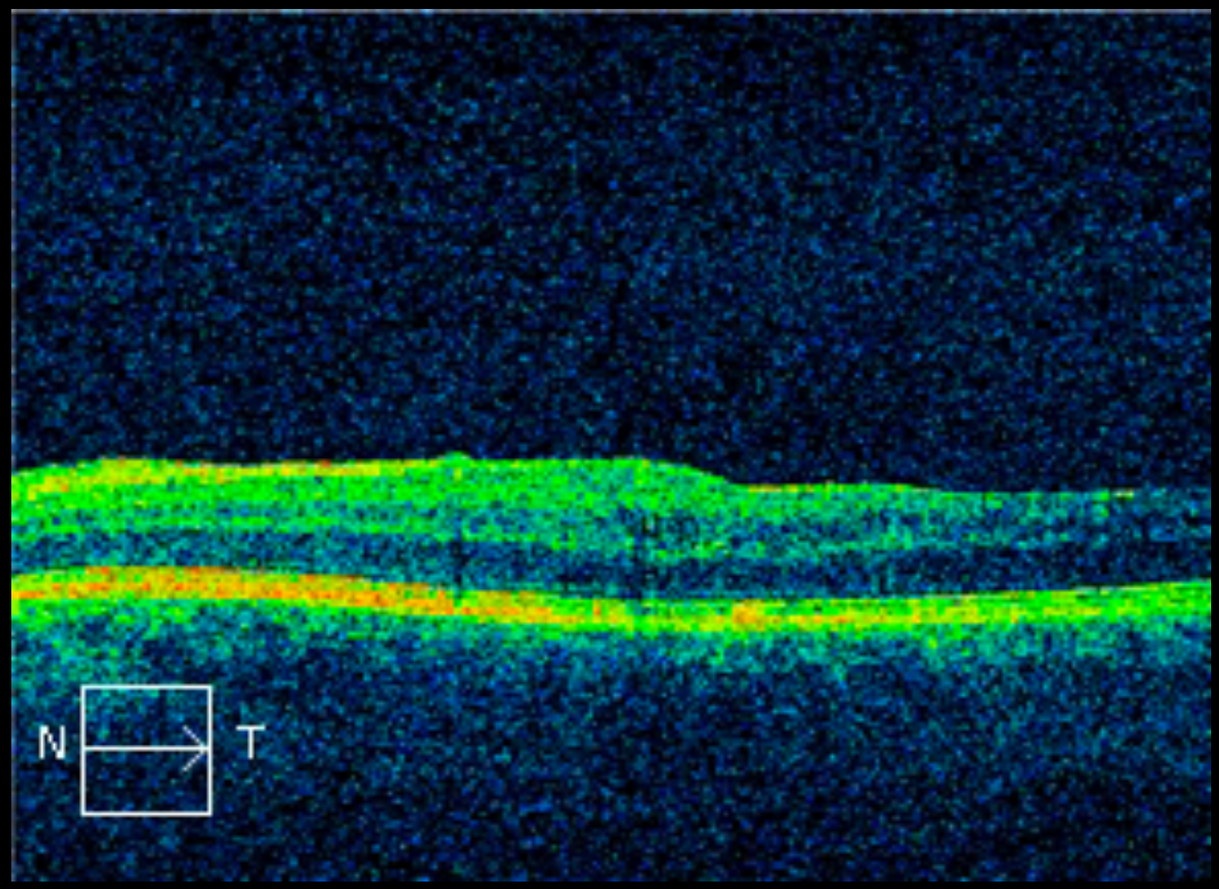


Fig. 3. IOP changes during treatment.

Und Switching von “On label“ auf “Off label“?

Pat., m., 60 Jahre



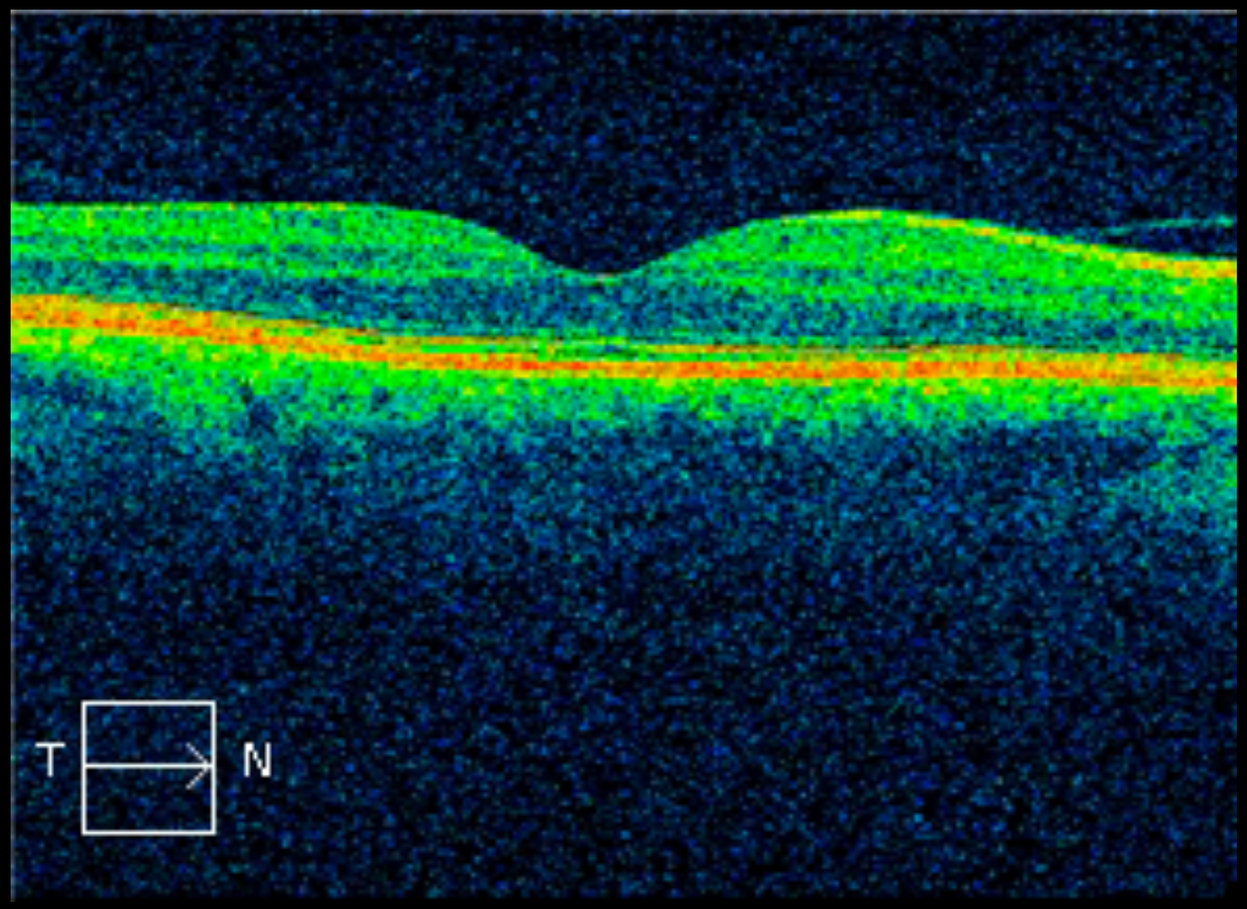


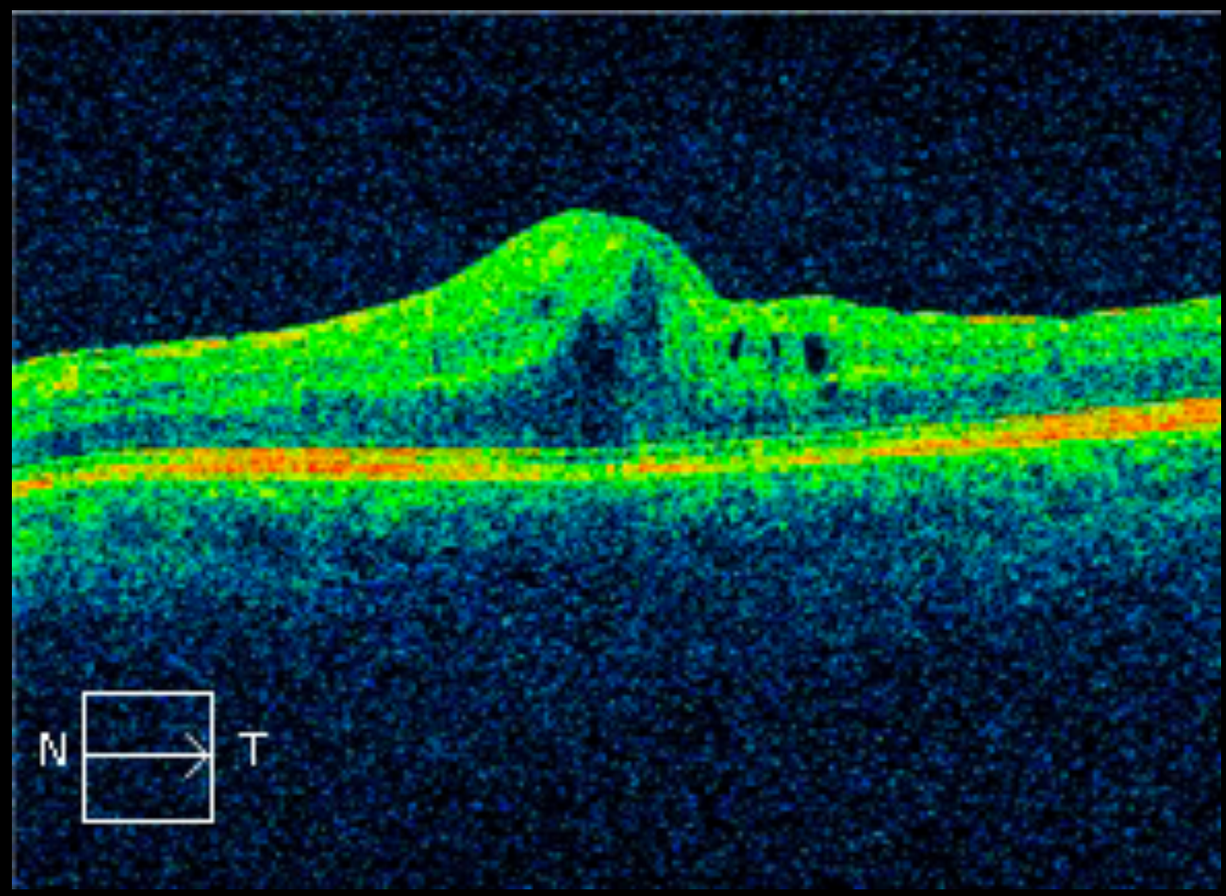
05/2017

LA Z.n. rezidivierendem MÖ nach VAV
Z.n. Dexamethason x1, Steroidresponder, lokale antiglaukomatöse Therapie
Z.n. Ranibizumab x21 (!)
Z.n. PPV+Peeling wg. Epiretinaler Gliose
Z.n. Aflibercept x15 + Versuch T&E Aflibercept x5 monatlich, keine Verlängerung Injektionsintervall

Visus RA 1,0 / LA Visus 0,5

Pat., m., 69 Jahre

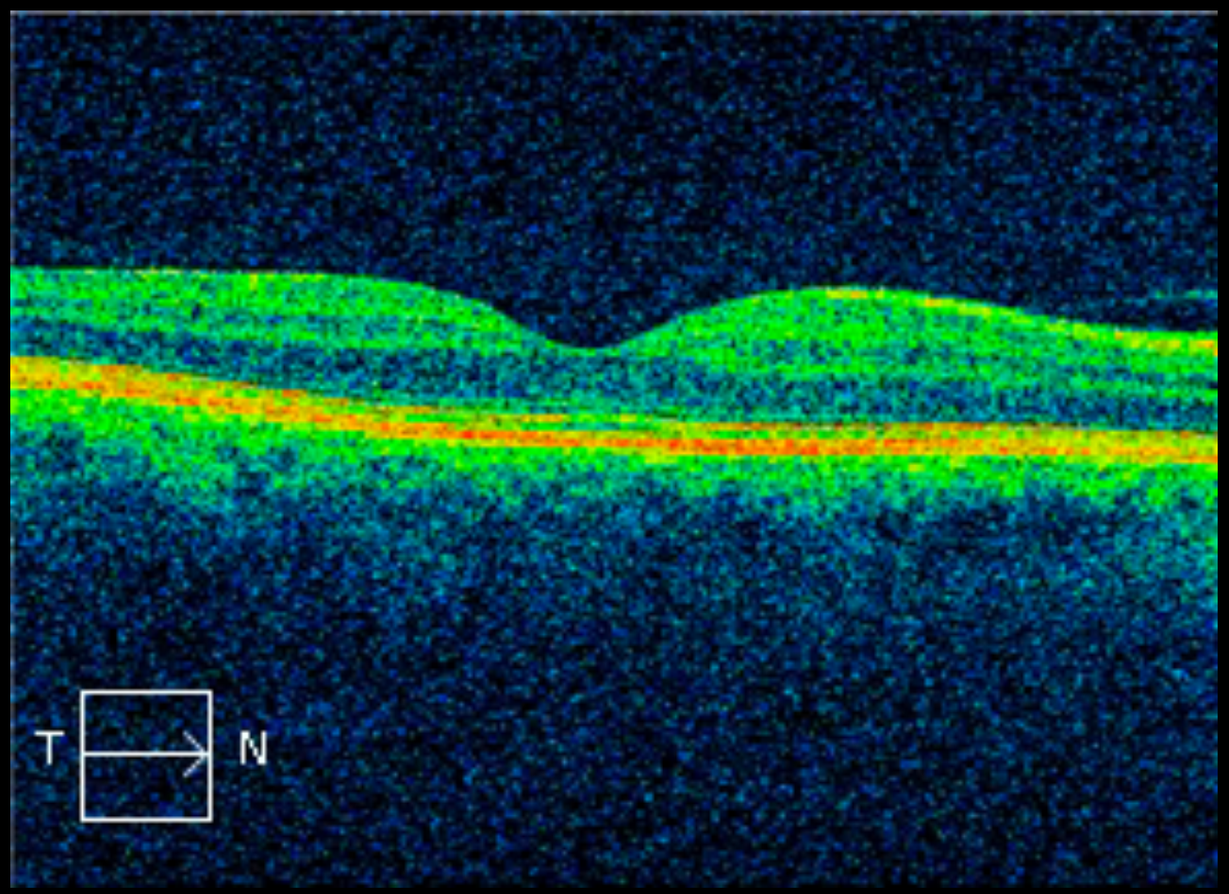


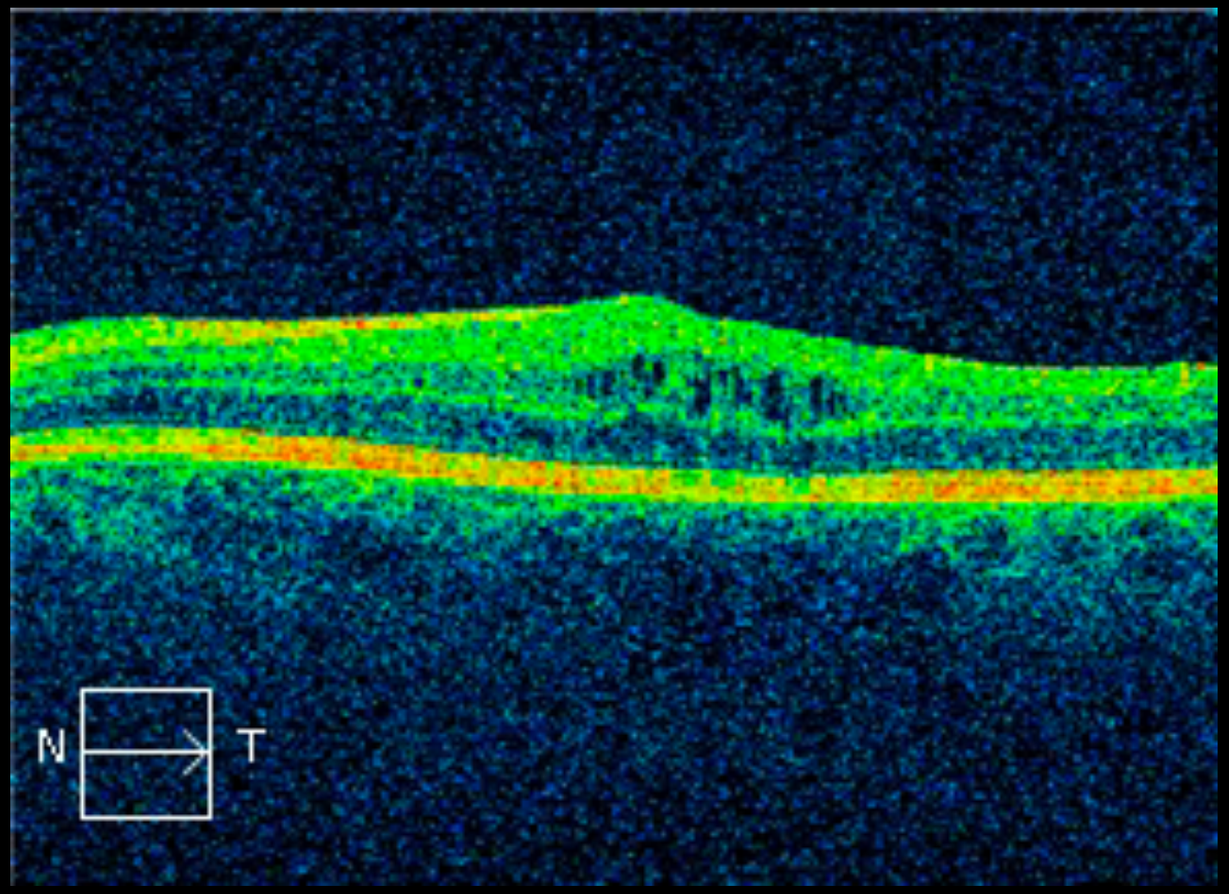


06/2017

LA Kontrolle nach 1 Monat post weiteren x5 Aflibercept monatlich

Pat., m., 69 Jahre



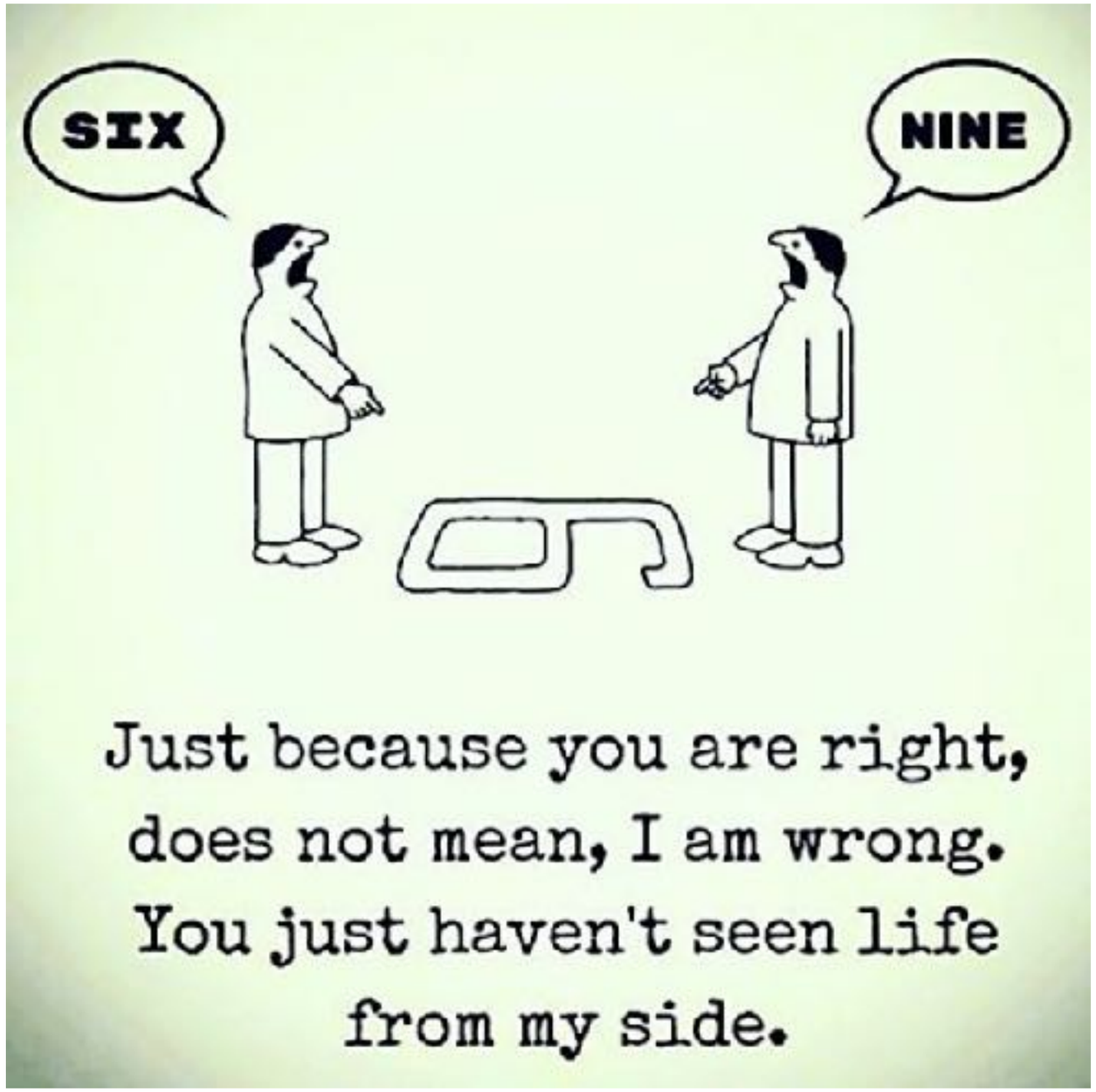


09/2017

LA Z .n. Switching auf Bevacizumab x3

Visus RA 1,0 / LA Visus 0,5

Switch?


SIX
NINE
Just because you are right,
does not mean, I am wrong.
You just haven't seen life
from my side.

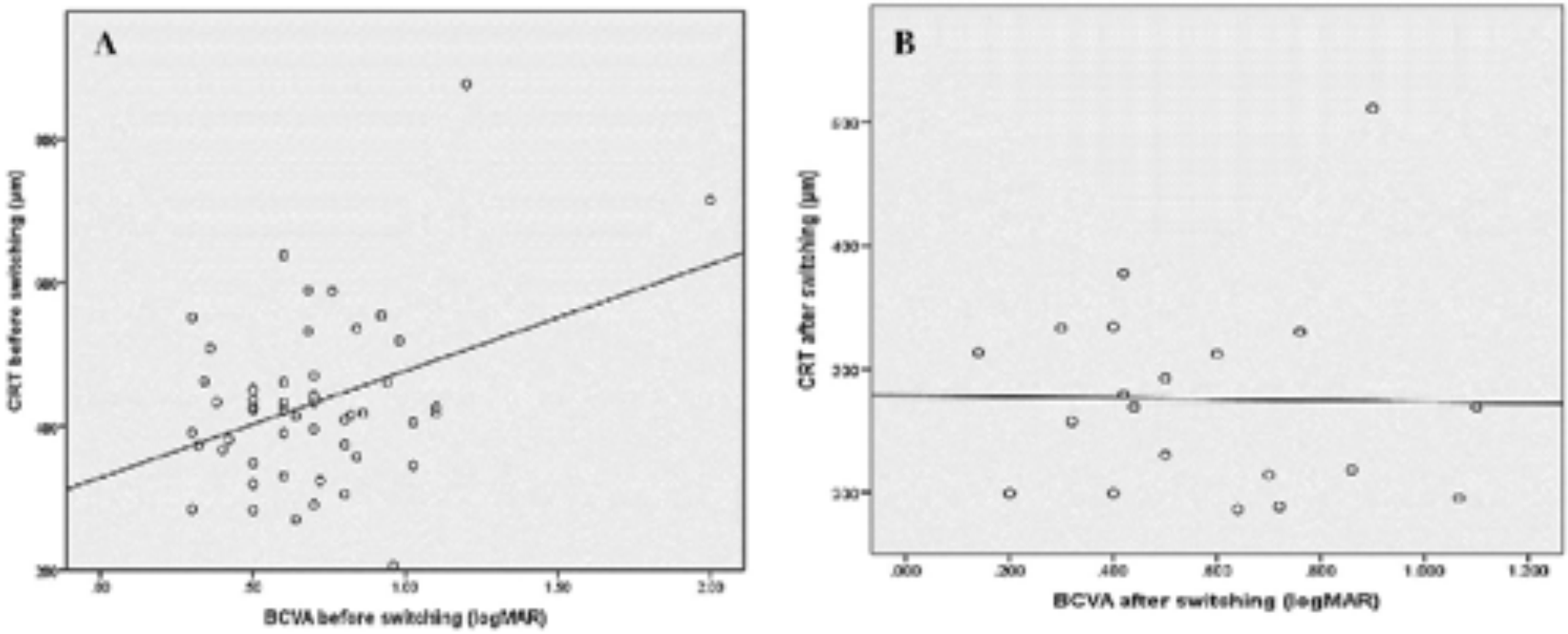
Zeit?

Ophthalmol Ther (2018) 7:387–395
https://doi.org/10.1007/s40123-018-0149-3

ORIGINAL RESEARCH

Real-World Results of Switching Treatment from Ranibizumab to Aflibercept in Macular Oedema Secondary to Branch Retinal Vein Occlusion

Vasileios E. Konidaris · Konstantinos T. Tsaousis · Rossella Anzidei · Guillermo de la Mata · Alexander J. Brent

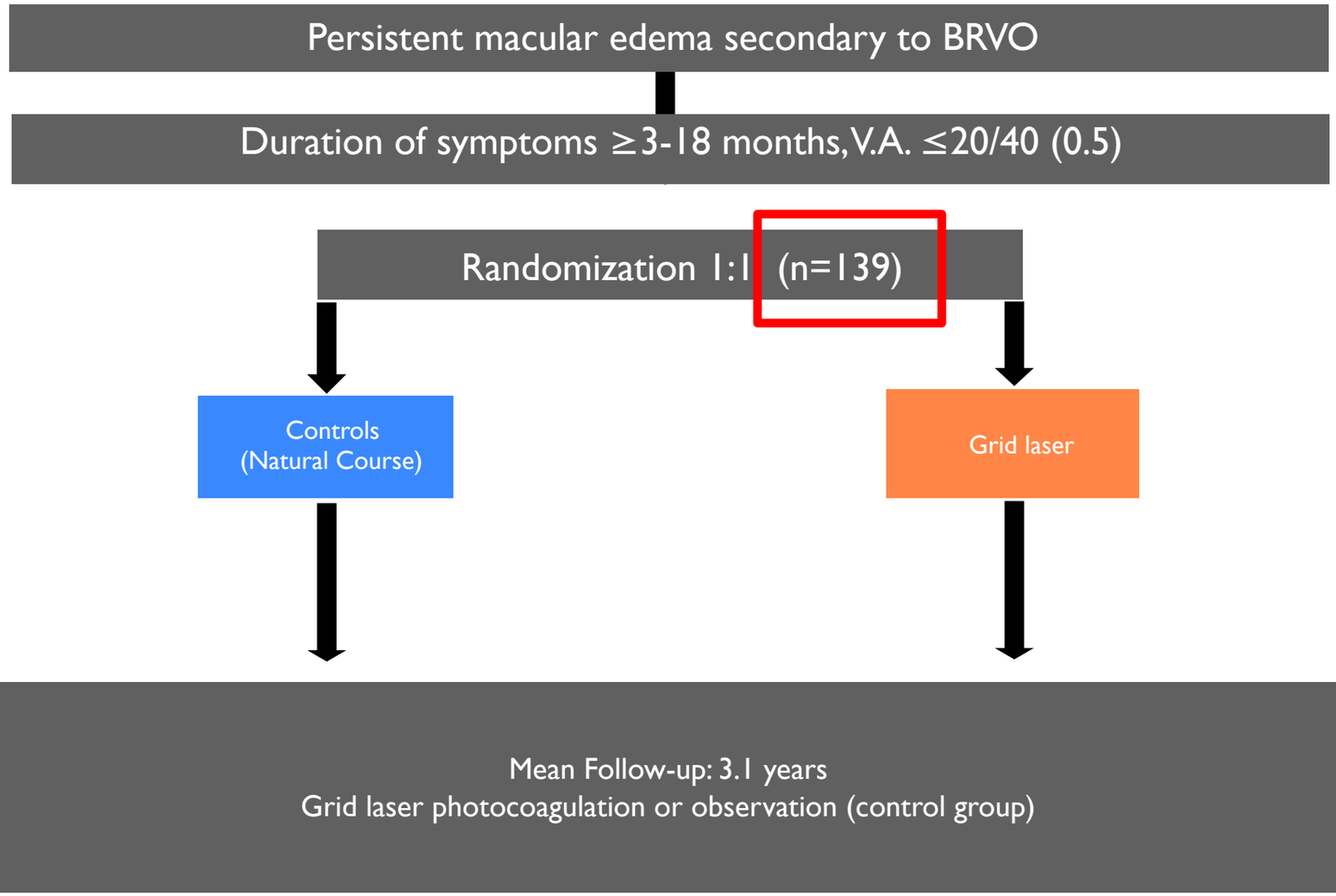


Nach Switching Netzhautdicke geringer, aber keine Korrelation mit Visus !

Laser zur Therapie des MÖ bei RVO ?

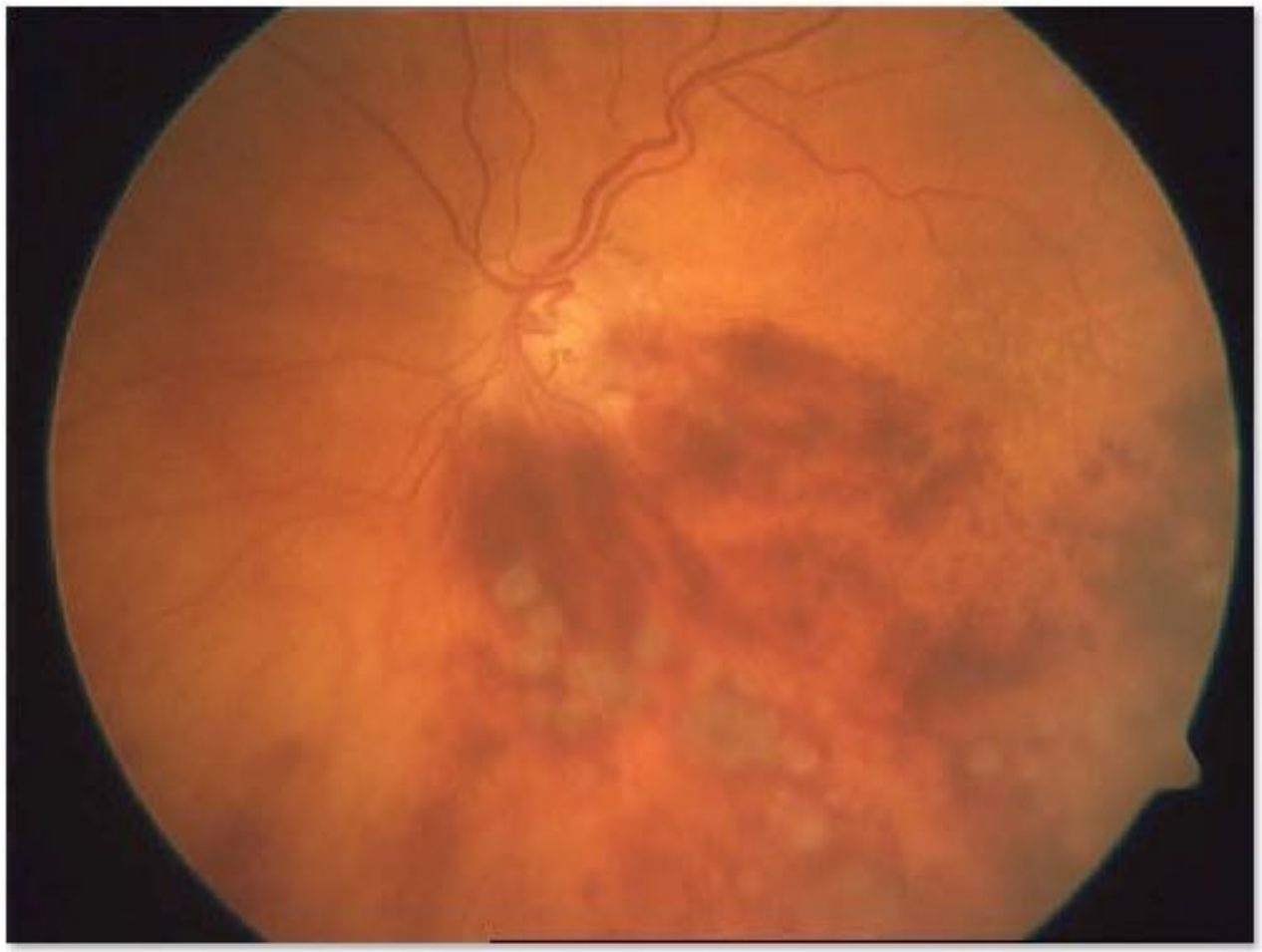
Stellungnahme RVO 2018

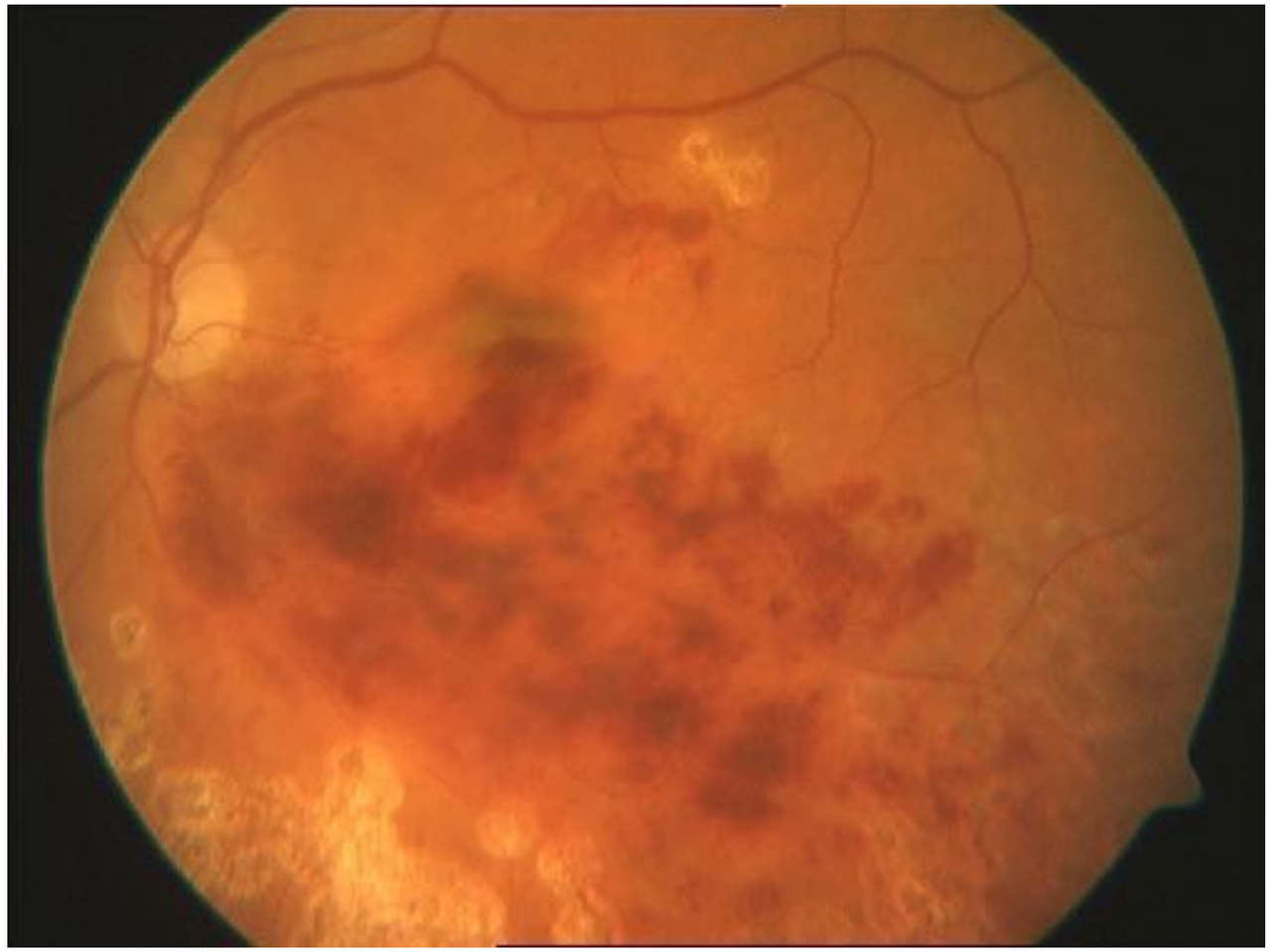
• Zur Behandlung des Makulaödems beim ZVV soll keine fokale Lasertherapie erfolgen.	⇓⇓
• Bei visusminderndem Makulaödem durch VAV kann eine fokale Laserkoagulation zur Minderung des Makulaödems sinnvoll sein.	⇔
• Diese sollte aber erst im Verlauf der Behandlung bei unzureichendem Erfolg der IVOM angewendet werden.	⇑



Argon laser photocoagulation for macular edema in branch vein occlusion. The Branch Vein Occlusion Study Group. Am J Ophthalmol 1984;98:271-82.

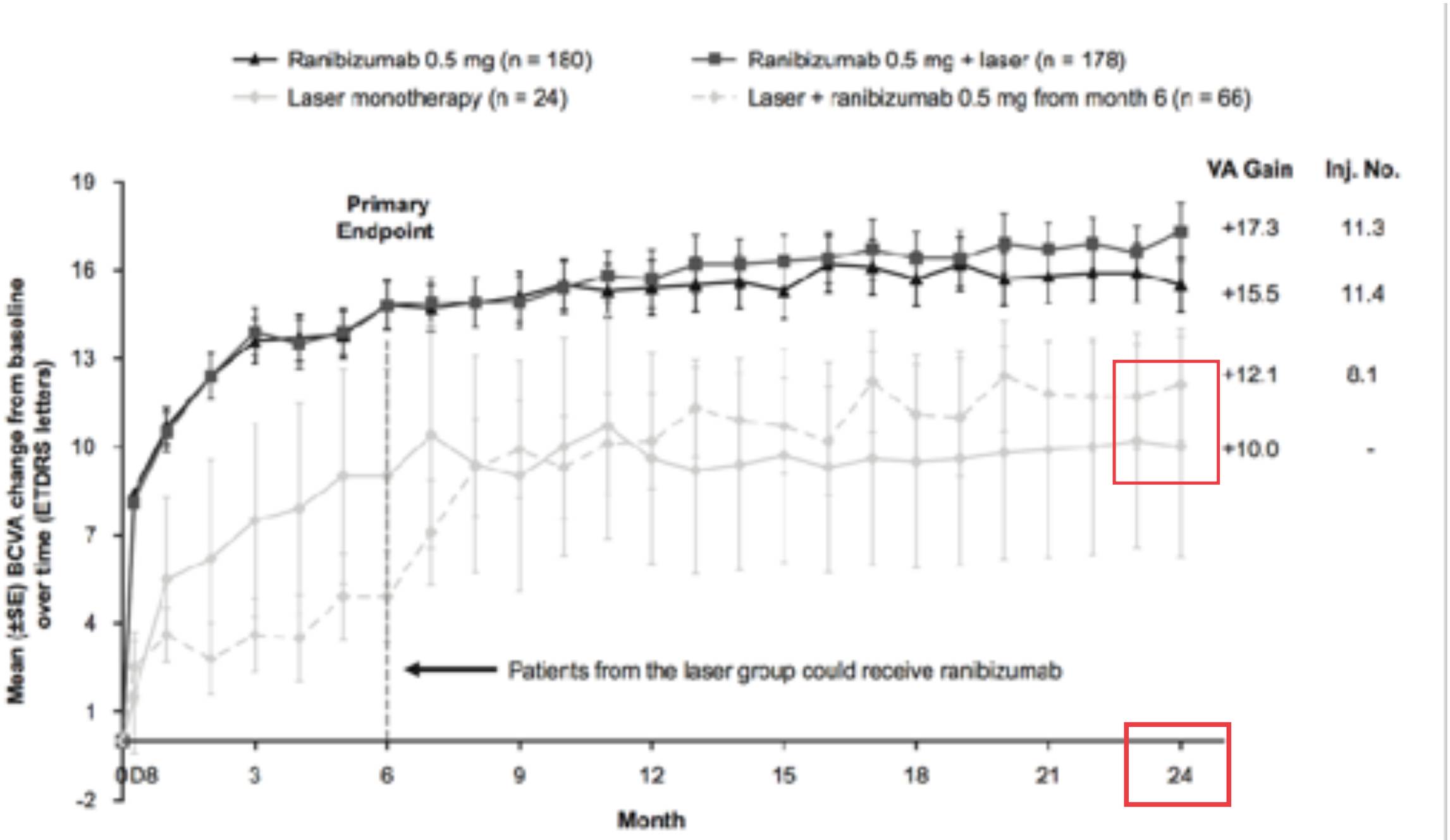
Die Branch Vein Occlusion Study ist 35 Jahre alt !





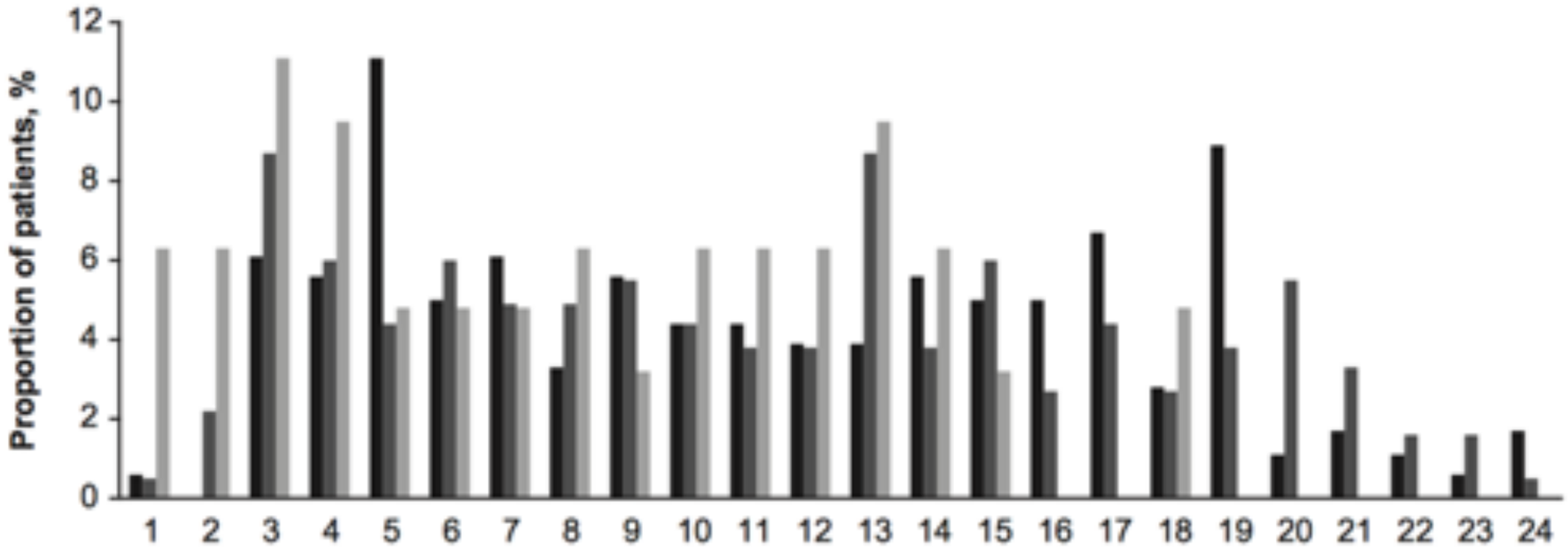
Der (Grid-) Laser ist keine Akuttherapie !

BRIGHTER: Ranibizumab vs. Laser



Keine Evidenz für additive Wirkung IVOM durch Laser !

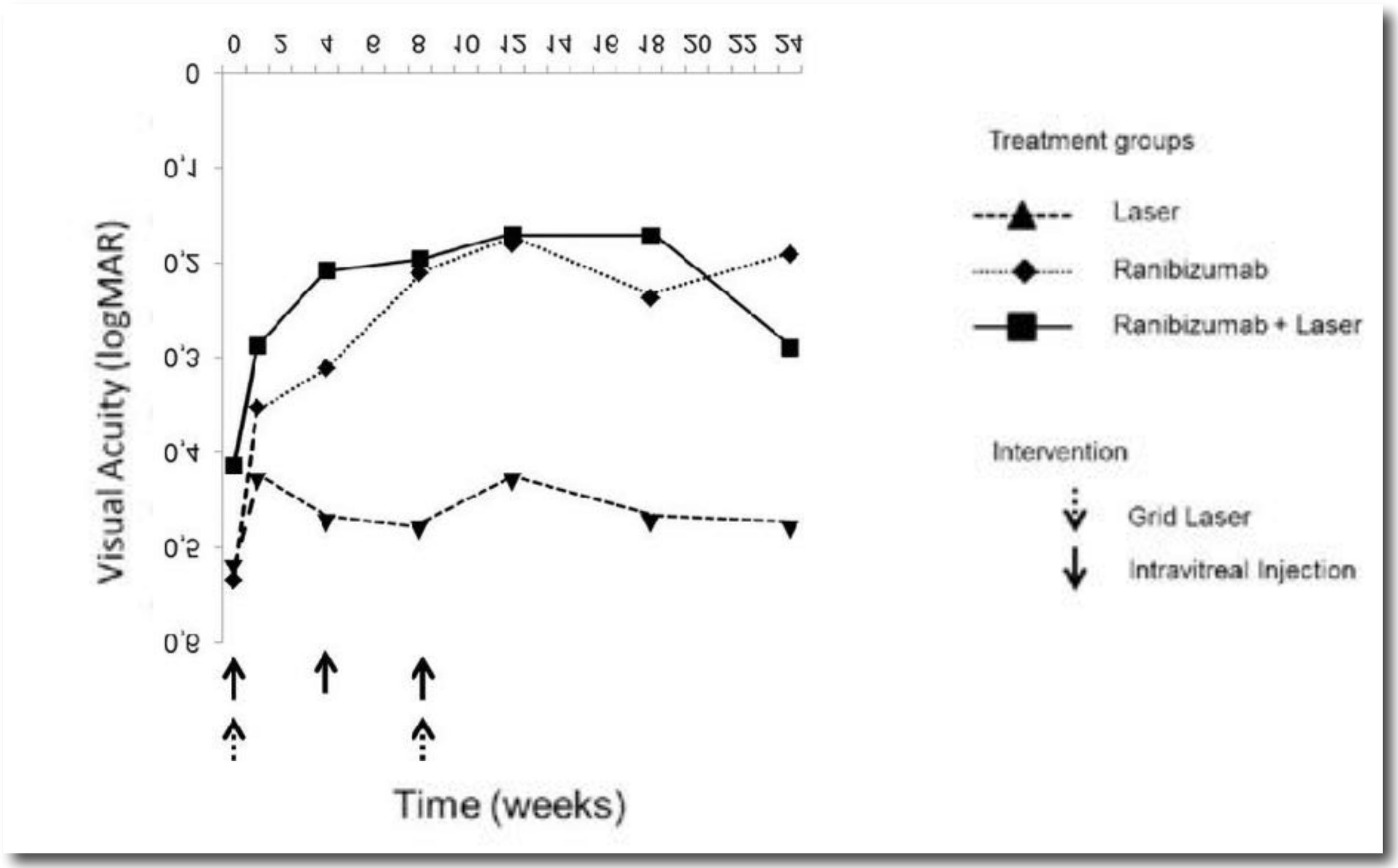
BRIGHTER: Ranibizumab vs. +Laser



	Ranibizumab 0.5 mg (n = 180)	Ranibizumab 0.5 mg + laser (n = 183)	Laser + ranibizumab 0.5 mg from month 6 (n = 63)
Number of injections			
Mean (SD)	11.4 (5.81)	11.3 (6.02)	8.1 (4.86)
Median	11.0	11.0	8.0

Keine geringere Injektionshäufigkeit !

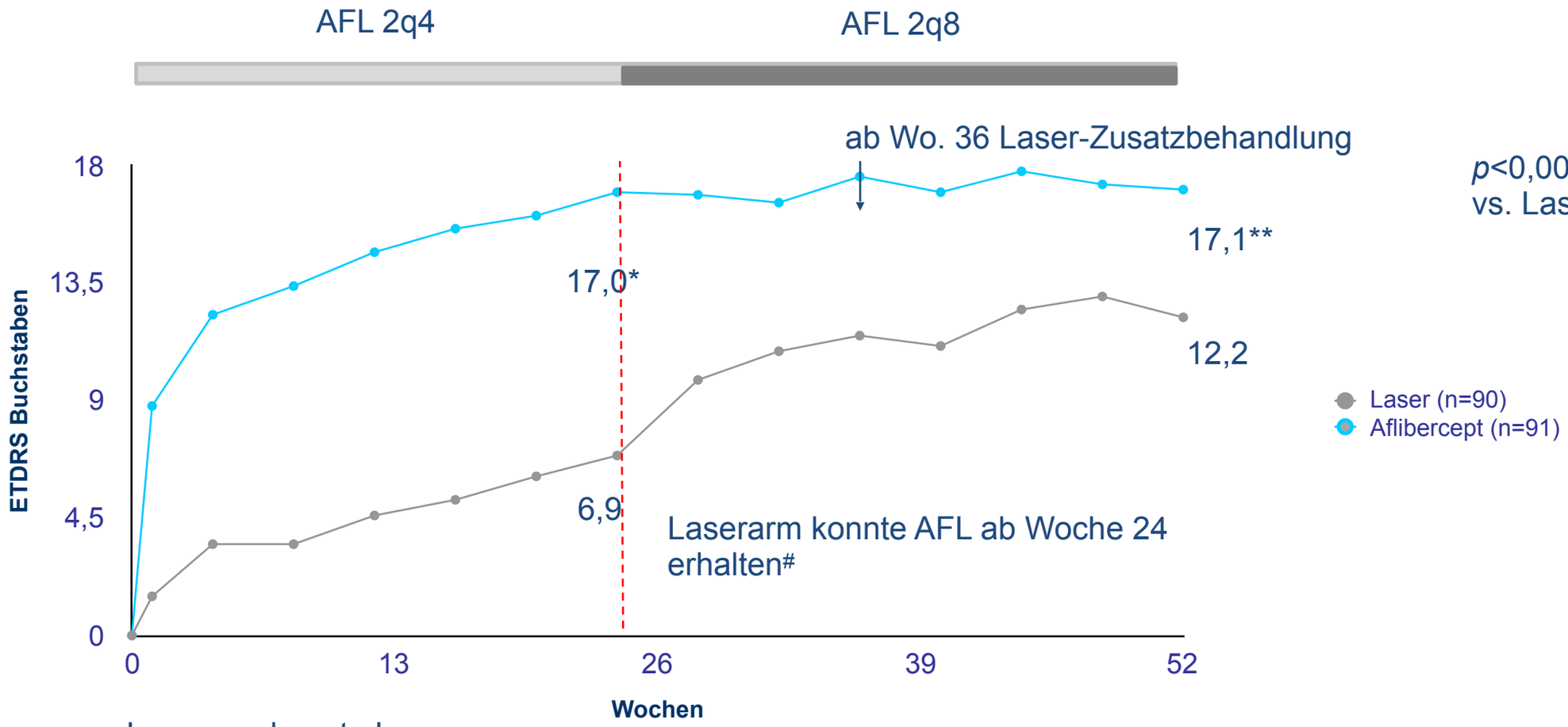
RABAMES: Kein Vorteil Laser trotz Warten >3Mon. !



Pielen A, Mirshahi A, Feltgen N, Lorenz K, Korb C, Junker B, Hattenbach LO. Ranibizumab for Branch Retinal Vein Occlusion Associated Macular Edema Study (RABAMES): six-month results of a prospective randomized clinical trial. Acta Ophthalmol 2015;93:e29-37.

VIBRANT: Aflibercept vs. Laser bei VAV

LOCF (Primäre Analyse)



„Klassische“ Grid-Lako im Vergleich zu Anti-VEGF unterlegen,

kein Vorteil durch kombinierte Therapie !

Ist die Hämodilution noch eine Therapieoption bei venösen Netzhautgefäßverschlüssen?

Stellungnahme
des Berufsverbandes der Augenärzte Deutschlands,
der Deutschen Ophthalmologischen Gesellschaft und
der Retinologischen Gesellschaft

Intravitreale Therapie des visusmindernden Makulaödems bei retinalem Venenverschluss
Therapeutische Strategien

Stand 24.04. 2018

Hämodilution als therapeutische Option

isovolämisch

- Plasmaersatz (HES)
- Aderlaß
- Hämatokritabsenkung >10%
- Rheologika (Pentoxifyllin)

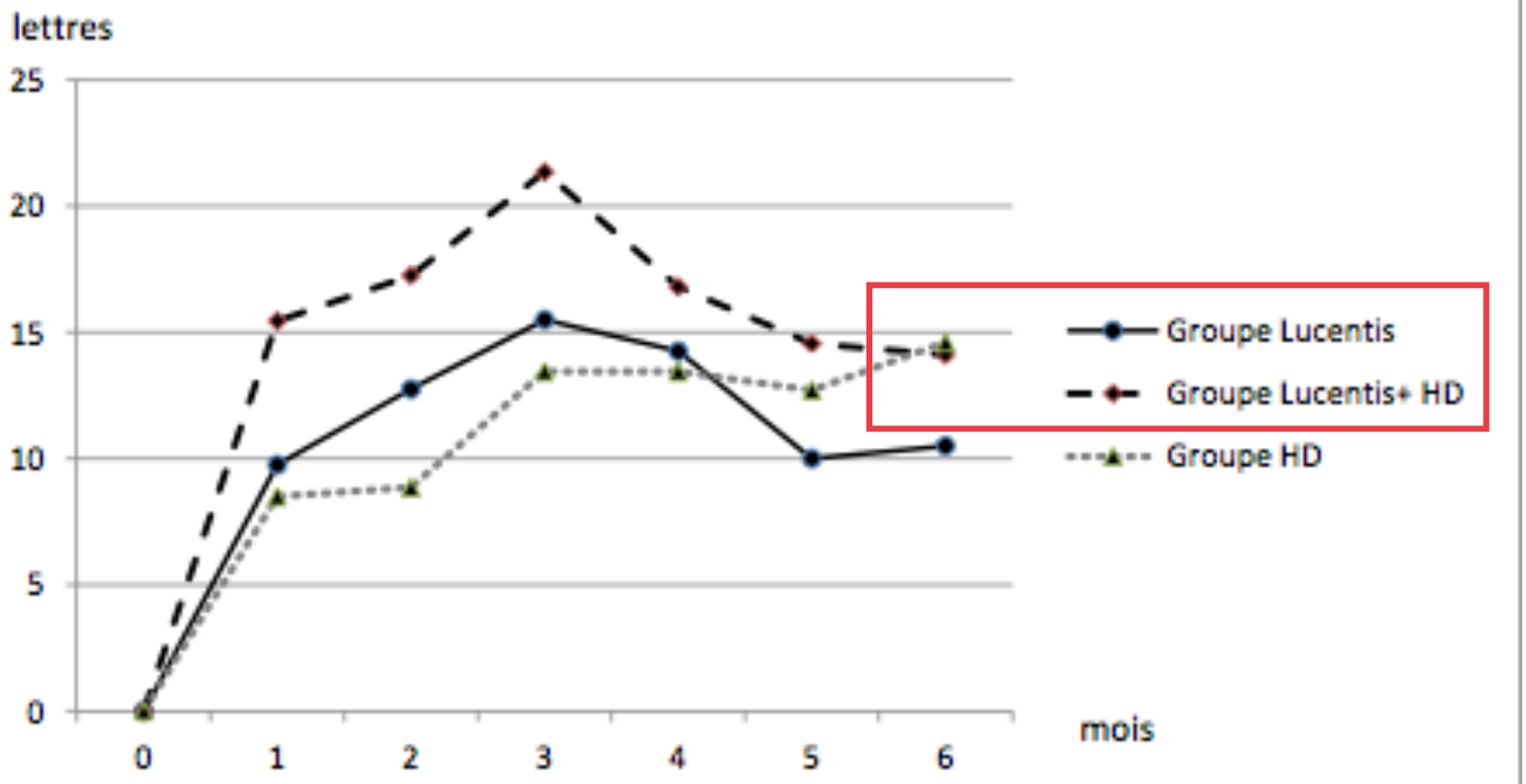
Sonderfall rheologische Therapie !

Comparaison de la prise en charge précoce des occlusions de la veine centrale de la rétine par ranibizumab et/ou hémodilution Ajout d'une étoile "en dur" pour les articles de JRDIA - 09/11/15

Comparison of early management of central retinal vein occlusion with ranibizumab versus hemodilution

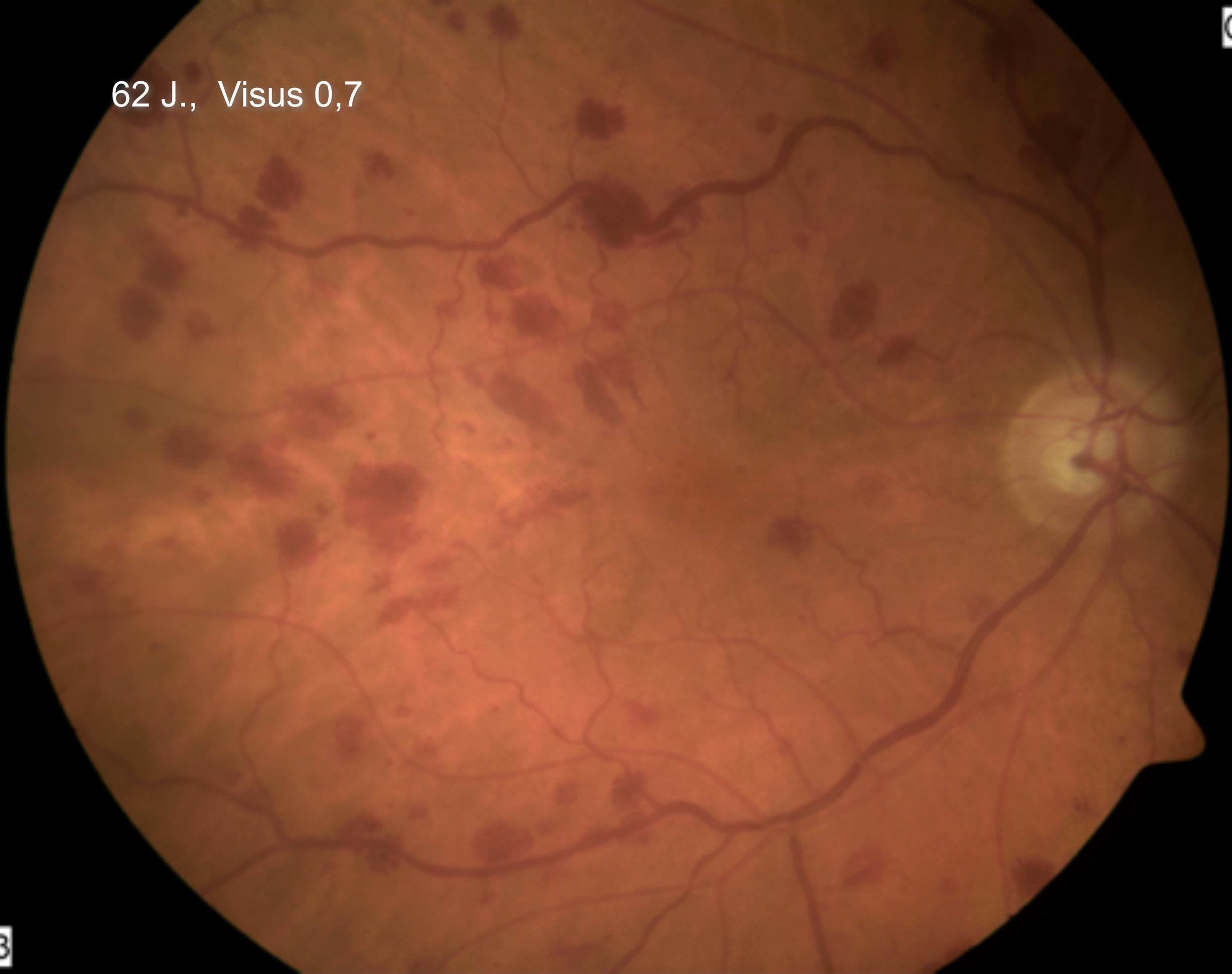
Doi : 10.1016/j.jfo.2015.03.016

*M. Graber [a] * , A. Glacet-Bernard [a], C. Fardeau [b], N. Massamba [a], M. Atassi [b], O. Rostaqui [a], F. Coscas [a], P. Le Hoang [b], E.H. Souied [a]*

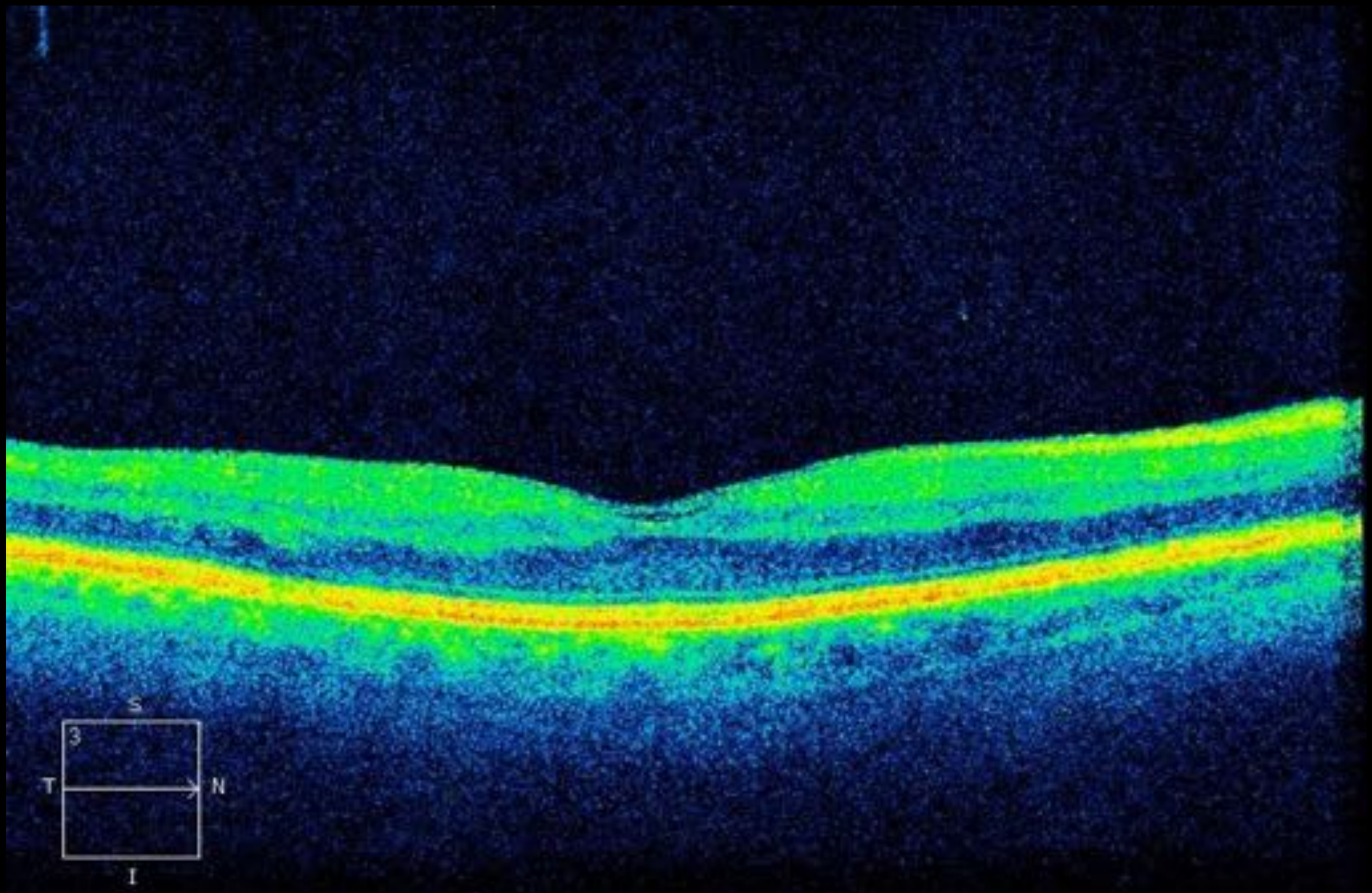


- CRVO (n=44), HD vs. Ranibizumab vs. Ranibizumab+HD
- Kein Unterschied BCVA oder CRT nach 6 Mon.
- HD Therapieoption bei jungen Patienten (?)

62 J., Visus 0,7



3



Kein Makulaödem: Hämodilution

“Black Box“ Warnung HAES-steril 6/2013

FDA Safety Communication: Boxed Warning on increased mortality and severe renal injury, and additional warning on risk of bleeding, for use of hydroxyethyl starch solutions in some settings

Date: June 24 2013

Purpose: FDA has analyzed recent data that indicate an increased risk of (i) mortality and renal injury requiring renal replacement therapy in critically ill adult patients, including patients with sepsis and those admitted to the ICU; and (ii) excess bleeding particularly in patients undergoing open heart surgery in association with cardiopulmonary bypass. Additional caution regarding the use of these products is warranted.

Hämodilution: Augenheilkunde vs. Intensivmedizin

- Anderes Patientenkollektiv (Schwerstkranke bzw. Intensivpatienten!)
- Patienten erhielten Volumina weit über isovolämischer Hämodilution (50ml/kg KG = 4000ml/d 80 kg KG)
- Andere Indikation: Hydroxyethylstärke Plasmaersatz statt Rheologikum (=„Ophthalmologische Indikation“)

Hämodilution: Ersatzpräparate HAES (cave Evidenzlevel! Off label)

- Voluven® 6% Infusionslösung, Fresenius Kabi
- Poly[O-2-hydroxyethyl]stärke 60g in 1000 ml

- Volulyte® 6% Infusionslösung, Fresenius Kabi
- Poly[O-2-hydroxyethyl]stärke 60g in 1000 ml
- Molare Substitution 0,4
- Mittleres Molekulargew. 130.000 Da

Diomed

Patientennummer,
Fallnummer

Info MT 1

Klinik/Praxis:

KliLu
Wir leben Medizin.

Behandlung von Erkrankungen/ Verletzungen mit Medikamenten

Liebe Patientin, lieber Patient, liebe Eltern,

dieser Aufklärungsbogen dient Ihrer Information. Bitte lesen Sie ihn aufmerksam vor dem Aufklärungsgespräch und füllen Sie den Fragebogen gewissenhaft aus.

Warum und wie wird behandelt?

Nach den Ergebnissen der Untersuchungen leiden Sie/Ihr Kind an folgender Erkrankung/Verletzung:
z.B. Zentralvenenverschluss LA

Wir raten zur **Behandlung mit dem/den Medikament(en):**
isovolämische Hämodilution:
Volumen = HAES (als Infusion), Trental = Pentoxifyllin (als Infusion und Tablette)
ggf. Aderlässe je nach Leber

Wirkung des Medikaments

Mit der Anwendung des Medikaments wollen wir erreichen:

- ☐ Heilung
- ☐ kürzeren Krankheitsverlauf
- ☐ Unterstützung der Vitalfunktionen
- ☐ Unterstützung der Immunabwehr
- ☐ Schmerzlinderung
- ☐ Verhinderung/Verzögerung des Fortschreitens der Erkrankung (z.B. rheumatoide Arthritis)
- ☐ Verhinderung von Folgeerkrankungen/Spätschäden (z.B. art. Hypertonie)
- ☐ Behandlung von Krankheitsfolgen
- ☐ Ersetzung körpereigener Hormone oder Botenstoffe (Substitutionstherapie)
- ☒ *Verbesserung der Durchblutung*

Die Behandlung

Vorgesehen ist die Gabe des Medikaments mittels

☐ **Einspritzung**

☐ unter die Haut	☐ in Muskeln/Weichteile	☐ in die Rippenfellhöhle
☐ in eine Vene	☐ in Gelenke/Wirbelgelenke	☐ in die Bauchhöhle
☐ in eine Arterie	☐ in den Rückenmarkskanal	☐ ______ (ggf. bezeichnen)

☒ **Infusion in eine Vene**

______
(bitte z.B. Blutgefäße, Gelenke und/oder Lokalisation der Injektion/Infusion näher bezeichnen)

Rec. 10/2014v4
Bestell-Nr. 6051

13. August 2018

Hydroxyethylstärke(HES)-haltige Arzneimittel zur Infusion ▼: Neue Maßnahmen zur Verstärkung der bestehenden Beschränkungen aufgrund eines erhöhten Risikos von Nierenfunktionsstörungen und tödlichen Verläufen bei kritisch kranken oder septischen Patienten

Ärzte dürfen HES-haltige Arzneimittel zur Infusion nicht außerhalb der in der Fachinformation angegebenen Bedingungen anwenden, da dies zu schwerwiegenden Gesundheitsschäden bei ihren Patienten führen könnte.

Zusätzlich zu den oben erwähnten Beschränkungen beachten Sie bitte, dass HES in der niedrigsten wirksamen Dosis (< 30 ml/kg) über den kürzest möglichen Zeitraum (< 24 Stunden) angewendet werden sollte. Die Behandlung sollte von einer kontinuierlichen hämodynamischen Überwachung begleitet werden, damit die Infusion beendet werden kann, sobald die entsprechenden hämodynamischen Zielparameter erreicht worden sind.

Rheologische Therapie vs. Intensivmedizin !

Vielen Dank !