RETINA ROUNDUP

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A prospective, randomized, parallel group, double blind, multicenter study to compare the efficacy, safety and immunogenicity of Lupin's Ranibizumab with Lucentis® in patients with neovascular age-related macular degeneration

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Purpose: The present study compares the efficacy, safety, and immunogenicity of Lupin's biosimilar ranibizumab with that of Lucentis® in patients with neovascular age-related macular degeneration.

Methods: This prospective, double-blind, multi-centric phase-III study was conducted across 19 centers in India. A total of 202 patients with neovascular age-related macular degeneration were randomized (1:1) to receive either Lupin's biosimilar ranibizumab or Lucentis®, 0.5 mg, as an intravitreous injection once every month for 3 months. The primary efficacy endpoint was the proportion of patients who lost fewer than 15 letters from baseline in best-corrected visual acuity. The safety profile included assessment of adverse events, ophthalmic examination, physical and systemic examination, and vital parameters. The immunogenicity assessment was based on evaluation of anti-drug antibodies.

Results: Overall, 174 patients (87 [86.14%] in each group) completed the study. The demographics and baseline characteristics were comparable between the treatment groups. The proportion of patients losing fewer than 15 letters from baseline best corrected visual acuity score in the study eye was comparable between two groups. The difference between Lupin's ranibizumab and Lucentis® for the proportion of patients who lost fewer than 15 letters was within the predefined equivalence margin (intention-to-treat population: 1.0%; 95% confidence interval [CI], −3.3% to 5.4% and per protocol population: 1.2%; 95% CI, −3.2% to 6.4%). The incidence of treatment-emergent adverse events was comparable, and 11 (10.89%) patients in Lupin's ranibizumab and 19 (18.81%) patients in Lucentis® group had at least one treatment-emergent adverse event. The immunogenicity incidence as assessed by proportion of patients with positive anti-drug antibodies was numerically lower in Lupin's ranibizumab (4.95%) than Lucentis® (12.87%).

Conclusion: Lupin's biosimilar ranibizumab demonstrated therapeutic equivalence, desirable safety, and favorable immunogenicity profile compared to Lucentis®.

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2. American journal of ophthalmology. Published online: August 07, 2022. doi: 10.1016/j.ajo.2022.08.002

Vigorous Physical Activity as a Risk Factor for Central Serous Chorioretinopathy

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Purpose: To evaluate if frequent vigorous physical activity (PA) is significantly associated with active central serous chorioretinopathy (CSCR) and may represent a risk factor for CSCR.

Design: Case-control study

Methods: Setting: Multicenter study

Patient Population: Consecutive patients with active CSCR and a comparable control group of healthy participants

Observation Procedure: Both groups were interrogated about their PA using a shortened version of the International Physical Activity Questionnaire. The Ainsworth Compendium of PAs was taken as a reference for the activities requiring vigorous effort and to quantify the energy expended expressed in metabolic equivalent of task (MET).

Main Outcome Measure: A moderate/high practice of vigorous PA was opposed to an absent/low practice of vigorous PA in the two groups.

Results: One-hundred and five patients with CSCR and 105 healthy controls were included in the study. Moderate/high vigorous PA was observed in 63.5% of cases with CSCR and in 26% of cases of the control group (p=0.0001). The MET values of vigorous PA were 2173.2 ± 2081.5 in the CSCR group and 1216.3 ± 524 in the control group (p=0.029). The potential risk of disease associated with moderate/high vigorous PA was 5.58 (odds ratio; 95% confidence interval 3.01-10.69, p=0.0001).

Conclusions: This study demonstrates a significant association of vigorous PA with CSCR, indicating an increased probability of disease by 5.58 times. Frequent and intense PA, with the hypertensive episodes that it entails, can break the precarious hemodynamic balance in the choroid of individuals predisposed to CSCR, thereby favoring choroidal vascular decompensation and active disease.

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3. Ophthalmology Retina, Volume 6, ISSUE 7, P628-637, July 01, 2022.
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Time Course of Retinopathy of Prematurity Regression and Reactivation After Treatment with Ranibizumab or Laser in the RAINBOW Trial

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Purpose: To study the time course of retinopathy of prematurity (ROP) regression and reactivation after treatment with intravitreal ranibizumab or laser in the ranibizumab compared with laser therapy for the treatment of infants born prematurely with ROP trial.

Design: Post hoc analysis of a randomized, clinical trial.

Subjects: A total of 225 infants (448 eyes) were randomized to ranibizumab 0.2 mg (n ¼ 74, 148 eyes), ranibizumab 0.1 mg (n ¼ 77, 152 eyes), and laser (n ¼ 74, 148 eyes).

Methods: Features of disease regression were measured using time-to-event analysis per eye, corrected for within-subject association. Analyses of disease reactivation and additional treatments were descriptive.

Main Outcome Measures: Median time to regression of plus disease, stage 3 ROP, aggressive posterior (AP)-ROP to 24-week follow-up and disease reactivation and first additional treatment to 2-year follow-up.

Results: The median times to regression after ranibizumab 0.2 mg vs. laser were as follows: plus disease, 4 vs. 16 days ($P < 0.001$); stage 3 ROP, 8 vs. 16 days (P ¼ 0.004); and AP-ROP, 7.3 vs. 22 days (P ¼ 0.03). Results for ranibizumab 0.1 mg were similar to those for 0.2 mg, with a median of 4, 9, and 8 days, respectively. Additional treatments were given in 34 (25%) of 138 eyes after laser and 40 (27%) of 146 and 42 (28%) of 152 eyes after 0.2 mg and 0.1 mg ranibizumab, respectively. Incomplete disease regression requiring additional treatment occurred in 30 (22%) of 138 eyes after laser after a median interval of 15 days compared with 11 (8%) of 146 and 9 (6%) of 152 after 0.2 mg and 0.1 mg ranibizumab after a median interval of 21 and 13 days, respectively. Retinopathy of prematurity reactivation requiring additional treatment occurred in 3 (2%) of 138 eyes after laser after a median interval of 43 days compared with 22 (15%) of 146 and 26 (17%) of 152 after 0.2 and 0.1 mg ranibizumab after a median interval of 53.5 (maximum, 105) and 54.5 days (maximum, 128), respectively.

Conclusion: Intravitreal 0.2 or 0.1 mg ranibizumab induced a faster regression of plus disease, stage 3 ROP, and AP-ROP than laser did. Ranibizumab was associated with fewer additional treatments for incomplete disease regression but more for disease reactivation. Ophthalmology Retina 2022;6:628-637 [a] 2022 by the American Academy of Ophthalmology. This is an open access article under the CC BY-NC-ND license

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4. Journal of Ophthalmic and Vision Research (JOVR) / April–June 2022, Volume 17, Issue 2 / Pages 196–201.
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Changes in Scleral Thickness Following Repeated Anti-vascular Endothelial Growth Factor Injections

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Purpose: This cross-sectional study aimed to compare changes in scleral thickness between eyes injected with repeated anti-vascular endothelial growth factor (anti-VEGF) drugs and fellow injection naive eyes using optical coherence tomography (OCT).

Methods: A total of 79 patients treated with three intravitreal anti-VEGF injections in one eye versus no injections in the fellow eye were included. Anterior segment- OCT measured scleral thickness in the inferotemporal quadrant 4 mm away from the limbus.

Results: Injected eyes had a mean scleral thickness of 588 ± 95 µm versus 618 ± 85 µm in fellow naïve eyes ($P < 0.001$). Comparing injected eyes to fellow naïve eyes stratified by injection number showed a mean scleral thickness of 585 ± 93 µm versus 615 ± 83 µm in eyes with 3–10 injections ($n = 32$, $P = 0.042$); 606 ± 90 µm versus 636 ± 79 µm in eyes with 11–20 injections ($n = 24$, $P = 0.017$); and 573 ± 104 µm versus 604 ± 93 µm in eyes with >20 injections ($n = 23$, $P = 0.041$). There was no significant correlation between injection number and scleral thickness change ($r = –0.07$, $P = 0.26$). When stratified by indication, subjects with retinal vein occlusions showed a statistically significant difference in scleral thickness between injected and fellow naïve eyes (535 ± 94 µm and 598 ± 101 µm, respectively, $P = 0.001$).

Conclusion: Compared to injection naive eyes, multiple intravitreal injections at the repeated scleral quadrant results in scleral thinning. Consideration of multiple injection sites should be considered to avoid these changes.

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5. British Journal of Ophthalmology 2022;106:1145-1149.
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Better visual outcome associated with early vitrectomy in the management of endophthalmitis

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Purpose: To examine the role of early vitrectomy in the management of endophthalmitis from all causes.

Methods: Retrospective study of 290 consecutive subjects diagnosed with endophthalmitis at Auckland District Health Board between 1 January 2006 and 31 July 2019. Main outcome measure was visual acuity at 9-month follow-up and proportion of subjects with severe vision loss (≤20/200).

Results: Median age at presentation was 70.4 years and 151 subjects (52.1%) were women. Cataract surgery was the most common cause of endophthalmitis in 92 subjects (31.7%) followed by intravitreal injection in 57 (19.7%), endogenous endophthalmitis in 48 subjects (16.6%), non-surgical trauma in 42 subjects (14.5%), glaucoma surgery in 24 subjects (8.3%), vitrectomy in 22 subjects (7.6%) and corneal in 5 subjects (1.7%). Culture was positive in 136 (46.9%) with gram-positive organisms most common (76.5%). Early vitrectomy was performed in 82 subjects (28.3%). Median visual acuity at 9 months was 20/100 (IQR 20/30 to light perception), and severe vision loss occurred in 100 (43.5%). Retinal detachment occurred in 35 eyes (12.1%) and 26 eyes were enucleated. On multivariate analysis, younger age, poor presenting visual acuity and culture-positive endophthalmitis were associated with worse outcomes, and early vitrectomy was associated with better outcomes.

Conclusions: Early vitrectomy (within 24 hours) is associated with better visual outcomes at 9 months, while younger age, poor presenting visual acuity and culture-positive endophthalmitis are associated with poorer visual acuity outcomes.

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6. Indian Journal of Ophthalmology: August 2022 - Volume 70 - Issue 8 - p 3021-3025. doi: 10.4103/ijo.IJO_172_22

Predominant peripheral lesions in patients with diabetic retinopathy and its association with systemic comorbidities

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Purpose: To determine the associations of predominant peripheral lesions (PPLs) with systemic comorbidities in individuals with diabetic retinopathy.

Methods: This is a multicenter cross-sectional observational study conducted across three tertiary eye care centers in south India between January 2019 and July 2021. Ultra-widefield fundus images of consecutive patients with varying severity of diabetic retinopathy with data on systemic comorbidities were classified based on the presence or absence of PPL. Systemic comorbidities (hypertension, diabetic kidney disease, coronary artery disease, dyslipidemia, and anemia) were compared between the two groups.

Results: A total of 879 participants (70.1% males) were included in the study, of which 443 (50.4%) patients had PPL. The mean age of the study participants was 56 ± 10 years, mean age of onset of diabetes was 41.24 ± 11.6 years, and mean duration of diabetes was 15.39 ± 7.6 years. The number of PPL increased with increasing severity of DR. Of all the systemic comorbidities analyzed, we found that coronary artery disease (CAD) had a significant association with PPL (Odds ratio [OR]-1.69; 95% confidence interval [CI], 1.12–2.55; $P = 0.013$) after adjusting for diabetic retinopathy severity, duration of diabetes, and age of onset of diabetes.

Conclusions: The presence of PPL is a marker for coronary artery disease and early referral to cardiology is warranted.

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7. British Journal of Ophthalmology 2022;106:1044-1050. doi: 10.1136/bjophthalmol-2021-319876

Silicone oil versus gas tamponade for primary rhegmatogenous retinal detachment treated successfully with a propensity score analysis: Japan Retinal Detachment Registry

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Purpose: To compare the effects of silicone oil tamponade (SOT) to that of gas tamponade (GT) on the best-corrected visual acuity (BCVA) after successful vitrectomy for retinal detachment (RD).

Methods: A retrospective, multicentre, nationwide study with RD who were registered in the Japan-RD Registry. All cases with RD treated with successful vitrectomy between February 2016 and March 2017 were studied. A propensity score matching was performed using the preoperative findings as covariates to adjust the relevant confounders. The primary outcome was the estimated mean difference of the postoperative BCVA in 6 months between eyes treated with SOT to those treated with GT.

Results: Of the 3446 cases registered, 2097 cases met the entry criteria. There were 2042 eyes that had GT and 55 eyes that had SOT. Primary success was defined as a reattached retina with no tamponade at 6 months. After propensity score matching, each group contained 40 cases. The preoperative BCVA was 0.966±0.738 logMAR units in the GT group and 1.270±0.945 logMAR units in the SOT group (p=0.177). Six months postoperatively, the BCVA in the GT group was significantly better at 0.309 logMAR units in the GT group than the 0.671 logMAR units in the SOT group (p=0.002).

Conclusions: Even after successful surgery for RD, eyes that experienced SOT had poorer BCVA than eyes treated with GOT. SOT should be considered cautiously.

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