

Retinopathy

OPHTHALMOLOGY

Neovascularisation: Pegaptanib may have a direct effect

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The effects of intravitreal pegaptanib on retinal neovascularisation (RN) were investigated in a retrospective analysis of a randomised clinical trial.

2 People with RN were identified from a trial evaluating pegaptanib for the treatment of diabetic macular oedema.

3 Participants had a best-corrected visual acuity letter score between 68 and 25, and received intravitreal pegaptanib or a sham injection at study entry, week 6 and week 12, with extra injections and/or photocoagulation for 18 weeks, up to a maximum of six treatments.

4 Fundus photographs and fluorescein angiograms were used to assess changes in RN.

5 Of a total of 172 participants, 19 had RN in the study eye at baseline; three were excluded, leaving 16 remaining participants, one of whom had panretinal photocoagulation during follow up.

6 Eight out of 13 people in the pegaptanib treatment group, none of three in the sham group and none of four fellow (non-study) eyes showed either RN or regression on fundus photographs or regression or absence of fluorescein leakage from RN at 36 weeks.

7 In three of the eight people with regression, RN progressed at week 52 after cessation of pegaptanib at week 30.

8 Most people with RN at baseline who were assigned to pegaptanib showed regression of RN by week 36.

9 Pegaptanib may have a direct effect on RN in people with diabetes.

Adamis AP, Altaweel M, Bressler NM et al; Macugen Diabetic Retinopathy Study Group (2006) Changes in retinal neovascularization after pegaptanib (Macugen) therapy in diabetic individuals. *Ophthalmology* **113**: 23–8

Encouraging results in the reversal of retinal neovascularisation



Deborah Broadbent, Director of Diabetic Eye Screening, Royal Liverpool University Hospital

Conventional laser can be a very effective treatment for the retinal changes in diabetes. Pan-retinal photocoagulation for diabetic retinopathy is largely successful if applied at the optimum stage in the course of the condition. The management of diabetic maculopathy has proved less easy.

Conventional treatment has combined focal ablation of microaneurysms and gentle-grid laser to oedematous areas. However, the vision only improves in 3% of cases, with the laser acting to stabilise only. Many patients end up with a vision around 6/18 or 6/24, which is not registrable but gives them significant quality-of-life issues.

In addition, vision can actually worsen after conventional argon-laser treatment due to heat damage to the choriocapillaris and outer retinal layers, causing subretinal fibrosis, secondary choroidal neovascular membrane and progressive enlargement of laser scars with time.

Vascular Endothelial Growth Factor (VEGF) has long been implicated in both the development of diabetic maculopathy, causing increased endothelial permeability by loss of tight cell junctions (zonula occludens) and thus break-down of the blood-retinal

barrier, and proliferative diabetic retinopathy, by promoting endothelial cell proliferation.

Anti-VEGF agents have been investigated as a theoretical alternative to conventional laser treatment. Oral preparations have received much attention, but research has also centred on the intravitreal injection of anti-VEGF agents in both diabetes and other neovascular conditions such as 'wet' age-related macular degeneration (AMD).

Pegaptanib has already received FDA approval for the treatment of AMD and its effectiveness in the treatment of diabetic maculopathy has been the subject of a randomised clinical trial.

This paper by Adamis et al (see left) presents a retrospective analysis of its effectiveness in controlling new vessel formation in patients with maculopathy. Of 172 patients in the phase II maculopathy study, 19 were noted at baseline to have new vessels and data on 16 of these is presented – 13 being in the pegaptanib arm of the study. The participant numbers are too small to conclude with great confidence but 8/13 (62%) showed regression of, or absent, neovascularisation at week 36 (one patient having also received pan-retinal photocoagulation). Neovascularisation progressed in 3/8 patients after cessation of therapy. The paper is very encouraging and supports further investigation in appropriately powered studies.

ACTA OPTHALMOLOGICA SCANDINAVICA

Pretreatment visual acuity and age may indicate prognosis

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 The visual acuity (VA) and grade of retinopathy before treatment with pan-retinal photocoagulation are known indicators of the visual prognosis after treatment, but the prognostic value of other clinical background and treatment parameters is unknown.

2 This study reports predictors for visual outcome identified in treatment parameters and retrospective clinical background data from 4422 pan-retinal photocoagulation sessions for proliferative

diabetic retinopathy in 1013 eyes of 601 patients.

3 Low age and high VA before treatment were strong positive predictors of VA after treatment.

4 Diabetes type, duration and year of treatment showed no influence on VA after treatment.

5 Visual prognosis was inversely related to the number of treatment sessions and to the number of vitrectomies, but was unrelated to any of the other parameters studied.

6 In proliferative diabetic retinopathy, pretreatment VA, age and the number of pan-retinal photocoagulation treatment sessions and vitrectomies needed to stop the condition are indicators of the visual prognosis after pan-retinal photocoagulation.

Bek T, Eriandson M (2006) Visual prognosis after panretinal photocoagulation for proliferative diabetic retinopathy. *Acta Ophthalmologica Scandinavica* **84**: 16–20

‘Proliferative diabetic retinopathy or macular oedema was found in 60% of the study group when entering the screening programme, compared to 7% of the control group’

AMERICAN JOURNAL OF OPHTHALMOLOGY

Association between stroke and impaired glucose metabolism

Readability	✓✓✓✓
Applicability to practice	✓
WOW! factor	✓✓

1 This population-based cross-sectional study describes vascular disease associations and risk factors of retinopathy in people with impaired glucose metabolism.

2 Retinal photographs taken of people with impaired fasting glucose and impaired glucose tolerance were graded for retinopathy.

3 Of 1027 people with impaired fasting glucose or impaired glucose tolerance, retinopathy was present in 69.

4 Following multivariate adjustment, retinopathy was associated with prevalent stroke (odds ratio, 4.2; 95% confidence interval, 1.8–9.7).

5 In people with impaired glucose metabolism, retinopathy is common and may be associated with stroke.

Wong TY, Barr ELM, Tapp RJ et al (2006) Retinopathy in persons with impaired glucose metabolism: the Australian Diabetes Obesity and Lifestyle (AusDiab) Study. *American Journal of Ophthalmology* **140**: 1157–9

DIABETIC MEDICINE

Eye patients find treatment has less impact than hoped

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓

1 This study looked at the patient experience of eye disease symptoms related to diabetes, and their treatment.

2 A total of 227 qualitative interviews were completed with people having their first laser treatment or first follow-up, and with multitreatment patients with loss of visual function in at least one eye.

3 The symptom most reported before initial treatment was blurred vision (55%).

‘In diabetic retinopathy, perimetry may give more useful information than visual acuity on functional loss’

ACTA OPHTHALMOLOGICA SCANDINAVICA

Screening compliance link with visual outcome

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓

1 The relationship between screening compliance and visual outcome in a screening programme for diabetic eye disease was examined in this retrospective case control study.

2 The screening compliance of diabetes patients (n=22) from the Icelandic National Registry for the Blind was compared to a matched group of 44 non-blind people with diabetes, and glycaemic control, cholesterol and blood pressure were assessed.

3 The study group had a significantly lower level of compliance with the screening programme.

4 Proliferative diabetic retinopathy or macular oedema was found in 60% of the study group when entering the screening programme, compared to 7% of the control group.

5 Blood pressure, cholesterol and blood glucose levels were identical.

6 The relationship between visual outcome and screening compliance in people with diabetes was significant.

Zoega GM, Gunnarsdottir T, Bjornsdottir S, Hreiðarsson AB, Viggoesson G, Stefansson E (2005) Screening compliance and visual outcome in diabetes. *Acta Ophthalmologica Scandinavica* **83**: 687–90

4 People being treated for the first time reported fewer symptoms than multitreatment patients.

5 Following a pronounced reduction in quality-of-life impacts after the first treatment, results show an increasing impact as people move from first to multiple treatments.

6 Expectations were generally met, but people responded that the treatment had less impact than they hoped for, and they would have the treatment again if needed.

Scanlon PH, Martin ML, Bailey C, Johnson E, Hykin P, Keightley S (2006) Reported symptoms and quality-of-life impacts in patients having laser treatment for sight-threatening diabetic retinopathy. *Diabetic Medicine* **23**: 60–6

DIABETOLOGIA

Perimetry may be more useful than visual acuity

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓

1 The outcomes of visual acuity and perimetric tests were compared in 59 people who had differing degrees of retinopathy; participants were examined using stereo fundus photography and fluorescein angiography.

2 Short-wavelength automated perimetry (SWAP) and white-on-white perimetry (WWP) were analysed.

3 Visual acuity was significantly associated with increasing severity of retinopathy according to the Early Treatment of Diabetic Retinopathy Study (ETDRS) scale when visual acuity was estimated by counting logarithm of minimum angle of resolution (LogMar) scores, but not when visual acuity was measured by reading the smallest line that could be seen.

4 Visual acuity decreased by 0.02 LogMar per ETDRS step.

5 The degree of visual field loss was significantly associated with increasing severity of retinopathy according to the ETDRS scale; perimetric sensitivity decreased by 0.44 dB per ETDRS step with WWP and by 0.40 dB per ETDRS step with SWAP.

6 WWP and SWAP showed the size of the area of the foveal avascular zone, and adjacent perifoveal intercapillary areas (PIAs) affected the central visual field, but did not affect visual acuity.

7 According to the ETDRS scale, the regression model fit for peripheral retinopathy was better using WWP than SWAP or visual acuity; SWAP was superior to visual acuity and WWP when measuring effects caused by enlarged foveal avascular zones and PIAs.

8 In diabetic retinopathy, perimetry may give more useful information than visual acuity on functional loss.

Bengtsson B, Heijl A, Agardh E (2005) Visual fields correlate better than visual acuity to severity of diabetic retinopathy. *Diabetologia* **48**: 2494–500