Retinopathy

Incidence of sight-threatening retinopathy in type 2 diabetes: a cohort study

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Screening for diabetic retinopathy is a priority in the recently published NSF for Diabetes. There have been a number of studies on population-based incidence of diabetic retinopathy in the USA and Europe. However, until now no study has measured incidence and progression to sight-threatening diabetic retinopathy (the level at which patients need to be referred to an ophthalmologist for follow-up and/or treatment) in a screening population.

In this study, all patients with diabetes who were registered with GPs, but were not being followed up by ophthalmologists, were screened photographically. These photographs were graded for the presence and severity of retinopathy and maculopathy by experienced individuals using a standard protocol.

Based on the cumulative incidence of sight-threatening diabetic retinopathy, Younis and colleagues suggest optimum screening intervals for various grades of retinopathy at baseline.

The study provides unique information based on actual risk of screened individuals, on which to base a recommendation for appropriate screening intervals for patients with diabetes. The recommended interval for eye examinations in current guidelines was based on observations from epidemiological studies that were interpreted to suggest that yearly examinations would be desirable. Evidence from this new study suggests that the interval could be extended to 3 years for patients with no retinopathy, but for higher grades of retinopathy and for patients with more than 20 years duration of diabetes or insulin users the interval should be yearly or more frequent.

Prevalence studies suggest that at any one time only around 30% of patients have any retinopathy. Screening programmes introducing longer screening intervals need to ensure robust systems for call-recall and careful monitoring of non-attendance, but clearly longer screening intervals should result in cost savings and improved cost-effectiveness.

DIABETIC MEDICINE

Affluence does not predict retinopathy at diagnosis

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

1 Retinopathy is often present at the diagnosis of type 2 diabetes. This study aimed to establish whether socio-economic status influences the time taken for people to be diagnosed with type 2 diabetes, as judged by the development of diabetic retinopathy.

2 Patients newly diagnosed with type 2 diabetes who had received photographic retinal screening within the past 24 months were selected.

3 Townsend scores were used to indicate relative affluence or deprivation of the 1 844 patients selected.

4 No significant difference was found in the median Townsend score of people with and without diabetic retinopathy at first screening after diagnosis of type 2 diabetes.

5 The relative affluence of the area where a patient lives does not predict the likelihood of diabetic retinopathy at diagnosis of type 2 diabetes.

6 It remains to be determined whether this also relates to the time between onset and diagnosis of type 2 diabetes.

Litwin AS, Clover A, Hodgkins PR, Luff AJ (2002) Affluence is not related to delay in diagnosis of type 2 diabetes as judged by the development of diabetic retinopathy. *Diabetic Medicine* **19**: 843–46

THE LANCET

Screening intervals according to baseline retinopathy grade

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

1 There is a lack of data on which to base targets and protocols for sight-threatening retinal screening. This study calculated optimum screening intervals according to retinopathy grade at baseline.

2 Patients investigated had diabetes and were registered with GPs in the Liverpool Health Authority (excluding those under the care of an ophthalmologist). Non-stereoscopic three-field mydriatic photography and modified Wisconsin grading were used to screen patients.

3 Cumulative and yearly incidence of retinopathy, maculopathy and sight-threatening diabetic retinopathy were investigated, using results from 20 570 screening events.

4 Yearly incidence of sight-threatening diabetic retinopathy increased with time, and the higher the grade of retinopathy at baseline the greater the incidence of progression to sight-threatening retinopathy.

5 Results suggest that for a minimum of 95% certainty of remaining free from sight-threatening diabetic retinopathy, a 3-year screening interval could be adopted for patients with no retinopathy if there were no other risk factors. Yearly or more frequent screening is needed in patients with higher grades of retinopathy.

6 Screening intervals longer than a year in 70% of patients with no retinopathy and no high-risk criteria will result in cost savings.

Younis N, Broadbent DM, Vora J, Harding S (2003) Incidence of sight-threatening retinopathy in patients with type 2 diabetes in the Liverpool Diabetic Eye Study: a cohort study. *The Lancet* **361**(18): 195–200

'Cigarette smoke influences signal transduction, so its impact on diabetic retinopathy may be mediated by acid phosphatase locus 1.'

SURVEY OF OPHTHALMOLOGY

New advances in retinopathy therapy

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

1 Diabetic retinopathy remains difficult to treat and prevent, despite many years of investigation.

2 Recent research shows that all of the major cell types of the retina are involved in retinopathy.

3 The same systemic cardiovascular factors that increase risk of myocardial infarction, stroke and renal failure are involved in diabetic retinopathy.

4 Diabetic retinopathy is a medical and a surgical problem; its treatment should include ocular and systemic influences.

5 Many studies show that tissue oedema can be improved by corticosteroids, so it could be possible to modify the course of diabetic macular oedema with steroids.

6 These new observations provide new avenues for improved treatments to prevent loss of vision.

Gardner TW, Antonetti DA, Barber AJ et al (2002) Diabetic retinopathy: more than meets the eye. *Survey of Ophthalmology* **47**(Supp 2): 253–62

DIABETIC MEDICINE

Risk of retinopathy varies with age at type 1 diabetes onset

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

1 Retinopathy prevalence was examined in 440 Swedish patients, under 36 years at the time of type 1 diabetes onset (which occurred between 1983 and 1987).

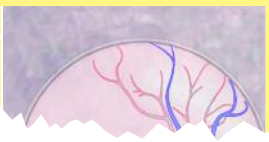
2 Prevalence of retinopathy was 11% in participants aged <5 years at diabetes onset, 48% in those aged 15–19 years at onset, and 30% in those aged 30–35 years at onset.

3 Individuals with HbA_{1c} in the highest quartile were at greater risk of retinopathy than those with lower HbA_{1c}.

4 In participants with diabetes duration of 6–13 years, prevalence of retinopathy is related to glycaemic control. Risk of retinopathy varies with age at onset, independently of differences in duration or glycaemic control.

Kullberg CE, Abrahamsson M, Arnqvist HJ et al (2002) Prevalence of retinopathy differs with age at onset of diabetes in a population of patients with type 1 diabetes. *Diabetic Medicine* **19**: 924–31

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES



Impact of smoking on retinopathy may be mediated by ACP1

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

1 This study investigated the role of acid phosphatase locus 1 (ACP1) as a mediating influence in the interaction between smoking and diabetic retinopathy.

2 A total of 78 women with type 1 diabetes who had just delivered live infants participated in the study. ACP1 phenotype was determined by starch gel electrophoresis.

3 Analysis of results revealed a significant epistatic interaction between smoking and ACP1 phenotype concerning their effects on retinopathy.

4 In individuals with low ACP1 activity, frequency of retinopathy was slightly higher in smokers than in nonsmokers. In those with medium-high ACP1 activity, frequency of retinopathy was significantly lower in smokers than in nonsmokers.

5 Analysis using retinopathy as the dependent variable revealed that smoking, ACP1, and ACP1 by smoking interaction, as well as the interaction between smoking and age of the women, are the most robust predictors of retinopathy.

6 Variability of the genetic factors involved in signal transduction may affect endothelium proliferation through regulation of growth factors and glycaemic levels.

7 Cigarette smoke influences signal transduction so its impact on diabetic retinopathy may be mediated by ACP1.

Magrini A, Bottini N, Nicotra M (2002) Smoking and the genetics of signal transduction: an association study on retinopathy in type 1 diabetes. *The American Journal of the Medical Sciences* **324** (6): 310–13

'Lipid-lowering therapy has the potential to augment laser photocoagulation in reducing visual loss in exudative maculopathy.'

EYE

Lipid-lowering therapy may help reduce visual loss

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

1 Cross-sectional studies suggest that patients with macular exudates have higher serum lipid levels; prospective studies show an increased risk of exudative maculopathy if baseline cholesterol is higher.

2 There is anecdotal evidence of the effect of lipid-lowering agents in reducing exudate; other studies have shown that lipid-lowering therapy may reduce macular exudates.

3 Lipid-lowering therapy has the potential to augment laser photocoagulation in reducing visual loss in exudative maculopathy.

4 A randomised controlled trial is required to investigate whether the use of systemic lipid-lowering therapy benefits patients with exudative maculopathy, even in the absence of dyslipidaemia.

Chowdhury TA, Hopkins D, Dodson PM Vafidis GC (2002) The role of serum lipids in exudative diabetic maculopathy: is there a place for lipid lowering therapy? *Eye* **16**: 689–93