Diabetic eye complications: epidemiology and management

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ABSTRACT

The PhD dissertation is based on three studies carried out at the Department of Ophthalmology, Odense University Hospital.

Diabetic retinopathy is one of the most frequent and most feared complications to diabetes mellitus.

Screening for diabetic eye complications is important since vision-threatening complications are preceded by only limited symptoms, if any at all, and since effective laser photocoagulation is available.

The aims of study 1 and 2 were: 1) to estimate the prevalence of retinopathy, visual impairment and blindness in a cohort of patients entering the photographic screening clinic at the Odense University Hospital (n=2212) and 2) to estimate the incidence and progression of retinopathy, visual impairment and blindness in this population over a 5-year period from 1997-2001 (n=1306) and to assess risk factors for development and progression of retinopathy.

Data were obtained from the photographic screening clinic database, medical and ophthalmological records.

The prevalence and incidence of diabetic retinopathy were comparable to results from recent European outpatient clinic-based studies using similar methods. No statistically significant difference in the incidence of any level of retinopathy could be found between type 1 and type 2 diabetic patients.

Independent determinants for the development of retinopathy in patients with type 1 diabetes were: increased urinary albumin excretion rate, HbA1c, BMI and duration of diabetes. In patients with type 2 diabetes, systolic blood pressure and duration of diabetes were associated with development of retinopathy.

The prevalence and incidence of social blindness was low, probably reflecting an improved metabolic regulation among diabetic patients and the timely application of laser photocoagulation.

Despite timely laser treatment, a few patients experience visual loss as the predominant laser wavelength used today (argon green) can lead to a progressive scar formation. Application of a new laser modality has shown to reduce this risk.

The aim of the 3rd study was to compare the effect of sub-threshold micropulse diode laser photo-coagulation (SMDLP) and conventional argon laser photocoagulation (CALP) for clinically significant macular edema.

In a clinical pilot study 16 patients (23 eyes) were randomized to either SMDLP or CALP. The patients were followed for a mean period of 6.5 months. Effect of treatment was evaluated by changes in visual acuity and retinal thickness as measured by Optical Coherence Tomography.

Results from this study showed comparable effect on both clinical endpoints.

Larger, controlled trials are needed if SMDLP is to be considered for routine treatment in the future management of DME.