

A CLINICAL STUDY OF DIABETIC RETINOPATHY

Karki K J D

ABSTRACT

A clinical study of diabetic retinopathy was conducted from March- May 2002 to diagnose a patient's diabetic retinopathy level and identify eyes of proliferative diabetic retinopathy and maculopathy so that these patients could get appropriate and timely laser photocoagulation surgery and other surgical modalities to reduce the risk of visual loss. This study shows that out of 248 diabetic patients examined, 45.9% patients had retinal changes. The potential candidates for panretinal and focal laser treatment were the patients with very severe non-proliferative diabetic retinopathy (NPDR) (3.5%), early proliferative diabetic retinopathy (PDR) or high-risk PDR (3.5%), and maculopathy (8.8%).

Key Words: *Diabetic retinopathy, Laser photocoagulation surgery and vitrectomy Surgery.*

INTRODUCTION

Diabetes mellitus is a multi-system disease that affects the kidney, heart, neuronal system and also the eyes in the young and the adults. Dr. Howard Root wrote in 1935 that ocular complications are destined to become one of the challenging problems of the future.¹ By the 1960s' the diabetic retinopathy was recognized as the leading cause of severe visual loss among persons 21-74 years old in the United States and in other industrialized countries of the world. An estimated 14 million Americans have diabetes mellitus, but only one-half of the cases have been diagnosed.^{2,3}

This disease was previously thought to be the disease of the industrialized countries and the disease of the affluent mass in this region. Recently, however, there are several reports indicating a high prevalence of diabetes mellitus in communities in the developing world. This may be due to increasing urbanization associated with changing life styles,

better medical and health care facilities and, of course, the increased life expectancy of the population as a whole. Over and above all these persons who have a family history of diabetes mellitus, those who are obese, pregnant and those with a history of an abnormal glucose tolerance test are more prone to develop this disease. This will all lead to high prevalence of diabetes and an increasing incidence of blindness from diabetes retinopathy in developing countries like India and Nepal.

The Indian and Nepalese scenario of diabetes mellitus and diabetic retinopathy is almost the same. The prevalence of diabetes mellitus reported by a collaborative study undertaken in India about two decades ago was 1.5-2%. A recent study undertaken in Nepal shows that diabetes mellitus and impaired fasting glycemia are present in 14.6% and 9.1% respectively of the people 20 years and above in urban and 2.5% and 1.3% in rural areas.⁴

Address for correspondence : Dr. K.J.D. Karki
Kathmandu Medical College, Sinamangal, Kathmandu
Email: kmc@unlimit.com.np

The incidence of diabetic retinopathy depends on the diabetic age of the patient and the type of the diabetes. The retinopathy increases from 25% at 5 years to 100% at 20 years of duration in Type-I diabetes. It is only 60-70% in Type-2 diabetes at 20 years of duration.

Diabetic retinopathy is still neither preventable nor curable. Nevertheless, there are established treatment and surgical modalities that can reduce the 5- year risk of severe visual loss (visual acuity less than 5/200) from proliferative diabetic retinopathy to less than 5% and the 5 year risk of moderate visual loss (vision reduced 20/200) from diabetic macular oedema to 12% or less.

There was as such, whatsoever, no treatment for diabetic retinopathy until 1967 when the first evidence of the effectiveness of scatter (panretinal) laser photocoagulation surgery in the treatment of diabetic retinopathy was promulgated in the ophthalmologic and medical communities.⁵

Since then a lot of work has been done in controlling diabetic retinopathy and macular oedema through the effective use of scatter (panretinal) laser and other surgical techniques. There are three major, nationwide, randomized and controlled clinical trials: the diabetic retinopathy study (DRS),⁶⁻¹⁹ the early treatment diabetic retinopathy study (ETDRS)²⁰⁻³² and the diabetic retinopathy vitrectomy study (DRVS).³³⁻³⁷ The results of these three clinical trials have determined the strategies for appropriate clinical management of patients with diabetic retinopathy.

The DRS conclusively demonstrated that scatter (panretinal) photocoagulation significantly reduces the risk of severe visual loss from PDR, particularly when high-risk PDR is present.

The ETDRS provided valuable information concerning the timing of scatter (panretinal) laser surgery for advancing diabetic retinopathy and conclusively demonstrated that focal photocoagulation for clinically significant macular oedema (CSMO) reduces the risk of moderate visual loss by 50% or more. Furthermore, ETDRS demonstrated that both early

scatter (panretinal) laser surgery (before high risk PDR) and deferral of treatment “until and as soon as high risk PDR developed” are effective in reducing the risk of severe visual loss. Scatter laser surgery, therefore, should be considered as an eye approaches the high-risk stage and “usually should not be delayed if the eye has reached the high-risk proliferative stage.”²⁸

The DRVS provided guidelines to most opportune time for vitrectomy surgery for patient with type-1 and type-2 diabetes mellitus who suffered from vitreous haemorrhage^{33,34,37} or from severe PDR in eyes with useful vision.^{35,36}

MATERIAL AND METHODS

The study was conducted in KMCTH Sinamangal from March to May 2002. Due to its central location in a highly populated area and experienced consultant services available, the number of diabetic patients visiting the eye department started rising. It was, therefore, decided to undertake this study. A total of 248 diabetic patients were included during this period. After meticulous vision testing and examination of the eyes the pupils were dilated fully and fundus examination was done with a direct ophthalmoscope and a slit lamp biomicroscope using +90D lens.

RESULTS

After the fundus examination of the eyes the patients were divided into 2 groups. (Table: IV) 134 patients (54%) were found to have their fundus within normal limits. These patients were advised to consult their physicians for their adequate and sustained control of blood glucose level and come for follow-up fundus examination yearly. Many clinical studies conducted in the USA and UK have shown that strict control of blood glucose levels in diabetes and blood pressure in diabetes with hypertension prevent the development of diabetic retinopathy and other microvascular and macrovascular complications.^{38,39} The remaining 114 patients (46%) had retinal changes which were classified according to ETDRS^{29,31} (Table V).

Table I : Age distribution