Original Article

Study of 189 Cases of Diabetic Retinopathy at CMC Larkana

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Purpose: To study the frequency, presentation and visual outcome after the management of diabetic retinopathy.

Material and Methods: The study was carried out at the Department of Ophthalmology, Chandka Medical College Larkana from September 2003 to March 2006. 361 eyes of 189 patients were included in this study. All patients were known diabetic. After taking careful history, complete ocular examination was carried out. The investigations included blood sugar, ocular B scan and FFA was performed where necessary. Treatment modalities include conservative in non proliferate diabetic retinopathy(NPDR) and laser photocoagulation in clinically significant macular edema(CSME) and proliferative diabetic retinopathy(PDR). Patients with vitreous hemorrhage and tractional retinal detachment require vitreoretinal surgery.

Results: Mean age at the presentation was 52 years with a range of 22-75 years. 62.5% of the patients were male and 37.5% female. 91% of the patients presented with bilateral diabetic retinopathy and 9% unilateral among the 189 patients. 205 eyes (57%) presented as non proliferative diabetic retinopathy(NPDR) and 156 eyes (43%) as proliferative diabetic retinopathy(PDR), Clinically significant macular edema (CSME) was seen in 90 eyes with NPDR and 29 eyes with PDR i.e. 119 eyes (33%). Vitreous hemorrhage was seen in 28 eyes (8%) and tractional retinal detachment in 14 eyes (4%). Neovascular glaucoma in 4 eyes (1%). Laser photocoagulation was done in 180 eyes. Visual acuity improved in 54 eyes (30%) remained same in 89 eyes (49.5%) and deteriorated in 37 eyes (20.5%).

Conclusion: In this hospital based descriptive study diabetic retinopathy was more frequently seen in male individuals. Non proliferative diabetic retinopathy was more frequent, as compared to proliferative diabetic retinopathy. Laser photocoagulation improved the vision in patients who had no vitreous hemorrhage and tractional retinal detachment.

The diabetes mellitus is one of the major cause of blindness in the world. It is the leading cause in USA and UK[1]. According to WHO estimates in 1995 4.3 million people in Pakistan had diabetes mellitus. It will swell up to 11.6 million by the year 2025[2].

According to Pakistan National Survey overall prevalence of diabetes mellitus is 11.47% and of

impaired glucose tolerance is 9.39%[3]. The advanced age, positive family history and obesity were associated risk factors. Diabetes mellitus causes 10% of new cases of blindness in UK each year[4].

Diabetic retinopathy is the most severe cause of blindness influenced by the risk factors and predicted by duration of diabetes mellitus. The incidence is 27% in 5 - 10 years, 71% in longer than 10 years and 90-95% after 30 years[5]. The diabetic retinopathy is classified as non proliferative diabetic retinopathy (NPDR), proliferative diabetic retinopathy (PDR), and clinically significant macular edema (CSME)[6,7]. Non proliferative diabetic retinopathy is further described as:

Mild
Moderate
Severe
Very severe

Proliferative diabetic retinopathy (PDR) is described as:

Early
High risk
Advanced

Macular edema can be present at any level of diabetic retinopathy. Macular edema is more common cause of visual loss in diabetic patients.

Laser photocoagulation is generally recommended for eyes with clinically significant macular edema (CSME) and high risk proliferative diabetic retinopathy (PDR).

MATERIAL AND METHODS

The hospital based descriptive study was carried out at the Department of Ophthalmology Chandka Medical College, Larkana from September 2003 to March 2006.The patients were selected from Retina clinic which is routinely being held twice a week at the Department of Ophthalmology Chandka Medical College Larkana.

361 eyes of 189 patients were included in the study. All patients were known diabetic. The specific proforma was established and the following protocol was followed in all cases.

1. HISTORY

a. Ocular and systemic status of the complaints or symptoms.
b. Type and duration of diabetes mellitus.
c. Other associated risk factors such as: renal problem, obesity, hypertension, pregnancy status, serum lipid levels, onset of puberty, family history, social history including, smoking and alcohol use.
d. Review of medical management:
   Treatment.
   Medication and dosage usage.
   Method and frequency of blood sugar monitoring.
   Average blood sugar.
   Recent laboratory values including Hb A1c

Complete ocular examination

a. Visual acuity: distance and near.
b. Pupillary reflexes.
c. Refraction.
d. Slit lamp biomicroscopy.
e. Applanation tonometry.
f. Gonioscopy.
g. Fundus examination.
   Direct ophthalmoscopy
   Indirect ophthalmoscopy with 90 D, three mirror.

INVESTIGATIONS

Laboratory: Blood sugar (Fasting + Random)
Lipid profile.
Ultrasonography: Ocular B scan.
Fundus photography.
Fundus fluorescien angiography.

Treatment Modalities

A. Conservative treatment in non proliferative diabetic retinopathy NPDR:
Patients were advised about strict blood sugar control, diet control, reduction of weight, exercise, follow up and complete ocular examination after six months.

B. Laser photocoagulation was done in:

a. Clinically significant macular edema (macular grid)
b. Severe/very severe non proliferative diabetic retinopathy.
c. Proliferative diabetic retinopathy PDR. (Panretinal Photocoagulation PRP).

Patients with vitreous haemorrhage and tractional retinal detachment required vitreoretinal surgery.

RESULTS

Number of patients and age distribution:
The hospital based descriptive study of 361 eyes of 189 patients was carried out. Individuals from 22–75 years of age , average age 52 years presented with diabetic retinopathy (Table 1).

Mode of presentation and sex distribution:

Among 189 patients 118 were male (62.5%) and 71 female (37.5%). The presentation of retinopathy was bilateral in 172 patients (91%) including 108 male (63%), 64 female (37%) and unilateral in 17 patients (9%), 10 male (59%) 7 female 41% (Table 2).

Clinical Presentation

Among 361 eyes non proliferative diabetic retinopathy (NPDR Fig. 1) was seen in 205 eyes (57%), proliferative diabetic retinopathy (PDR Fig. 2) in 156 eyes (43%), clinically significant macular edema (CSME Fig. 3) in 119 eyes (33%) including 90 eyes with NPDR and 29 eyes with PDR (Table 3). Advanced diabetic eye disease was seen in eyes with proliferative diabetic retinopathy, vitreous hemorrhage in 28 eyes (8%), tractional retinal detachment in 14 eyes (4%) and neovasculer glaucoma in 4 eyes (1%) (Table 4).

Treatment
Laser photocoagulation was done in 180 eyes. Visual acuity remained same in 89 eyes (49.5%) , improved in 54 eyes (30%) and decreased in 37 eyes (20.5%) as an outcome after laser photocoagulation (Table 5).

DISCUSSION

In this hospital based descriptive study about 361 eyes of 189 patients were included to study the frequency presentation and visual outcome after the management of diabetic retinopathy. Diabetic retinopathy is one of the major complication of diabetes mellitus that affects the retinal blood vessels and leads to blindness. About 4-8 million diabetics exist in Pakistan and very little work has been done on this complication of diabetes mellitus[8].

The age group involved in this study was 22-75 years, this shows that diabetic retinopathy is commonest cause of legal blindness in this age group. Same is reported by Italian diabetologist Grassi.[9] In our study the prevalence of diabetic retinopathy was significantly higher among males (62.5%) as compared to females (37.5%). The male preponderance has also been reported by Kayani and his colleagues in their study carried out at Lahore.[8] The report mentioned higher ratio among males (42.8%) as compared to females (27.9%).

The diabetic retinopathy is usually a bilateral disease. At our centre 172 (91%) individuals out of 189 presented with bilateral disease and 17 (9%) with unilateral disease. Although it is a bilateral disease but it could be due to asymmetrical presentation in the early stages of the disease.

Non proliferative diabetic retinopathy (NPDR) was present in (57%) of eyes, proliferative diabetic retinopathy (PDR) in (43%). This shows that NPDR is more common as compared to PDR. This has also been reported by Kayani and his colleagues in their study[8].

Table 1: Number of patients and age distribution:

Number of patients	189
Number of eyes	361
Age group	22 – 75 years
Average age	52 years

Table 2: Mode of presentation and sex distribution:

	No of Patients n (%)
Sex	189
Male	118 (62.5)
Female	71 (37.5)
Bilateral	172 (91)
Male	108 (63)
Female	64 (37)
Unilateral	17 (9)
Male	10 (59)
Female	7 (41)

Table 3: Clinical Presentation

Status	**No of eyes n (%)**
Total eyes	361
Non proliferative diabetic retinopathy (NPDR)	205 (57)
Proliferative diabetic	156 (43)

retinopathy (PDR)	
Clinically significant macular edema (CSME)	119 (33)
CSME & NPDR	90 (25)
CSME & PDR	29 (8)

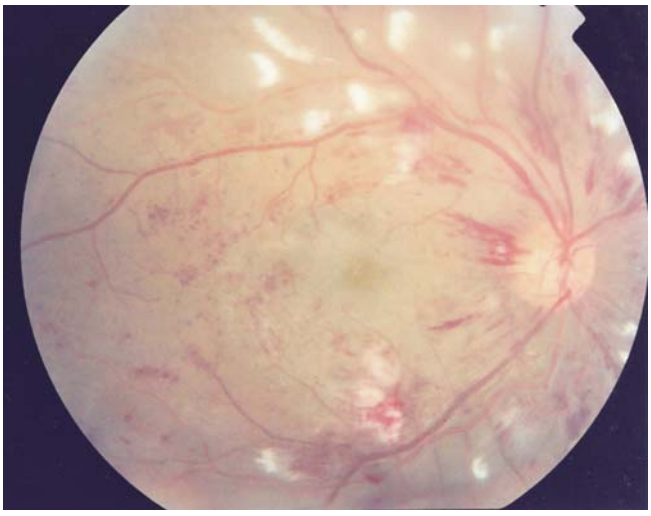

Fig. 1: Fundus photograph showing non proliferative diabetic retinopathy

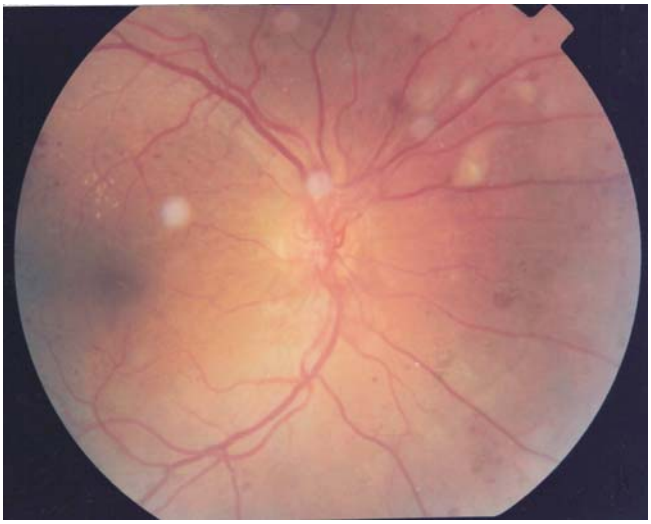

Fig. 2: Fundus photograph showing NVD (PDR)

Table 4: Advanced diabetic eye disease with proliferative diabetic retinopathy.

	No of eyes n (%)
Vitreous hemorrhage	28 (8%)
Tractional retinal detachment	14 (4%)
Neovascular glaucoma	4 (1%)

Clinically significant macular edema (CSME) was common cause of visual loss in 119 eyes (33%). CSME was seen in 90 eyes with NPDR and 29 eyes with PDR. Leske and his colleagues have reported the incidence

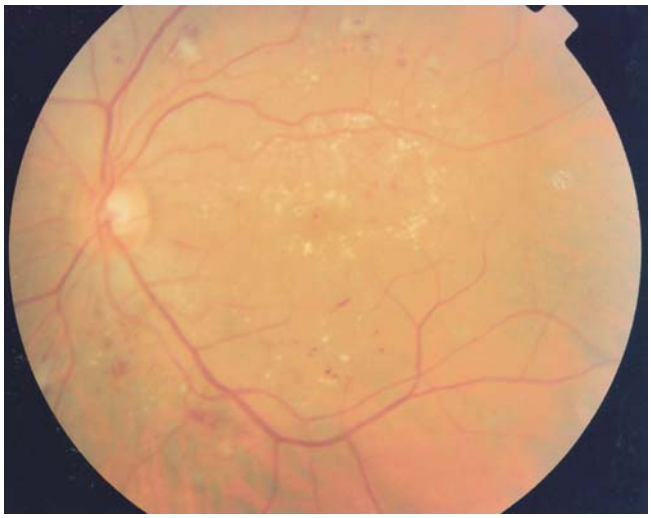

Fig. 3: Fundus photograph showing CSME

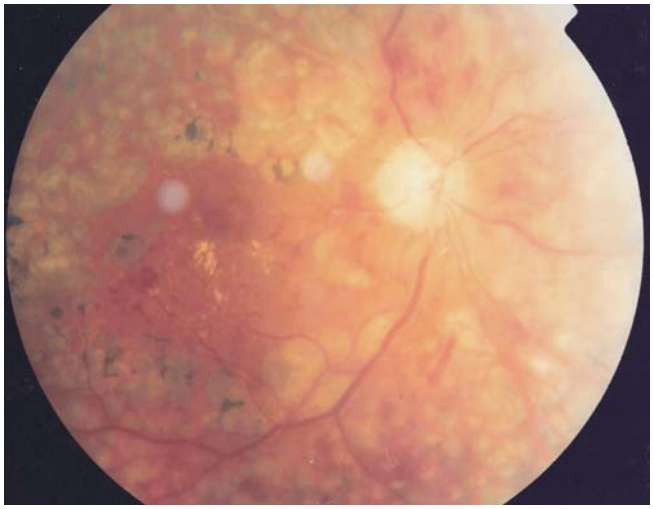

Fig. 4: Fundus photograph showingPRP

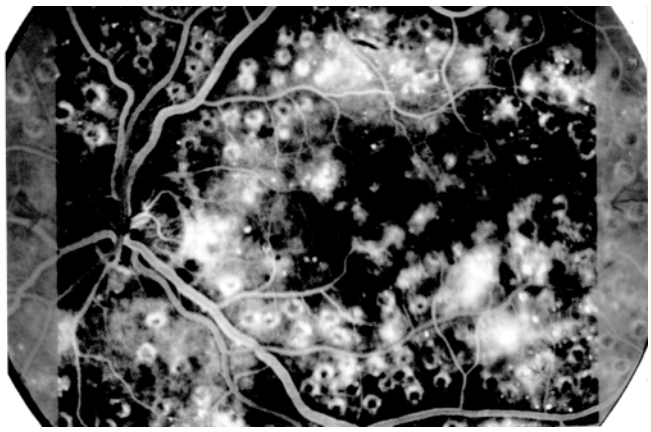

Fig. 5: Angiogram showing macular grid in CSME

Table 5: Visual outcome after laser photocoagulation laser photocoagulation was done in 180 eyes.

Level of visual acuity	No of eyes n (%)
Same	89 (49.5%)
Improved	54 (30%)
Deteriorated	37 (20.5%)

of CSME 8.7% in their study at Stony Brooks University New York[10].

Laser photocoagulation was performed in 180 eyes. The laser treatment was performed in the eyes with very severe bilateral NPDR showing extensive areas of capillary non perfusion on fundus fluorescein angiography (FFA), proliferative diabetic retinopathy (PDR) and clinical significant macular edema(CSME).

According to the visual outcome visual acuity remained same in most of the eyes i.e (49.5%) and was improved in (30%) and deteriorated in (20.5%). While treatment options of severe non proliferative and proliferative forms of diabetic retinopathy are limited to laser photocoagulation, photocoagulation has proven efficacy in slowing down the progression of diabetic retinopathy.[9] Timely laser treatment obviates visual loss in diabetic retinopathy[11].

Although laser treatment keeps vision damaged by diabetic retinopathy from becoming worse, it only rarely improves vision[12].

When laser is deemed necessary, the patient should be informed of the risks and benefits of the procedures. They should understand that the goal of laser treatment is to reduce the rate of visual loss, and appropriate treatment may be 90% effective in preventing severe visual loss (defined as VA <5/200)[13].

CONCLUSION

In this hospital based descriptive study we conclude that:

1. Diabetic retinopathy was more frequently seen in male individuals.
2. Non proliferative diabetic retinopathy was more frequent, as compared to proliferative diabetic retinopathy.
3. Laser photocoagulation improved the vision in those patients:
   a. Who were treated early.
   b. Who had no vitreous hemorrhage and tractional retinal detachment.

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