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ABSTRACT

AIM: To investigate the prevalence and determinants of diabetic retinopathy in a tertiary care centre in south India.

INTRODUCTION: Diabetes Mellitus (DM) is a leading cause of preventable blindness in developing and developed countries. Diabetic Retinopathy (DR) is a specific microvascular complication of DM. Our study intends to outline the magnitude of the DR problem in our community.

METHODS: Of the 1143 patients that attended OPD, 111 had DM. Identified patients underwent a battery of examinations and relevant blood investigations.

RESULT: Prevalence of DR amongst those screened was 48.64%. The retinopathy profile showed 9.90% cases of mild non proliferative diabetic retinopathy, 14.41% cases of moderate non proliferative diabetic retinopathy, 7.20% cases of severe non proliferative diabetic retinopathy, 17.11% cases of proliferative diabetic retinopathy, 14.41% cases of macular oedema.

CONCLUSION: The prevalence of DR in urban south Indian population is 48.64% and is strongly associated with hypertension.
Discussion: We cannot prevent the onset of diabetic retinopathy, but early detection by screening and appropriate, timely intervention can help minimise visual handicap. The progression of Diabetic Retinopathy begins with background retinopathy (BR), which is characterized by the presence of microaneurysms, enlargement of veins, retinal bleeding, retinal oedema, and exudates. The disease becomes sight-threatening once the patient progresses to proliferative diabetic retinopathy (PDR) or develops diabetic macular oedema (DMO). Proliferative diabetic retinopathy (PDR) is the most common cause of visual loss in type 1 diabetics. This phase is characterized by development of new blood vessels, which are fragile in nature and severe haemorrhage into the vitreous. When left untreated, they can lead to development of fibrous tissue, that causes distortion of the retinal architecture and consequently causes tractional retinal detachment. These new fragile blood vessels may also bleed, which worsens the preretinal or vitreous haemorrhage. In type II diabetics, diabetic macular oedema is the commonest cause of visual loss. There is no individual retinopathy sign that is specific for diabetic retinopathy- these features could also be a part of some other disease process. The pattern, symmetry and evolution of the retinal lesions characterise diabetic retinopathy.

The altered glucose metabolism seen in diabetes has been linked by biochemical pathways to the development and progression of diabetic retinopathy. A multifactorial biochemical pathogenesis is plausible, involving products of the aldose reductase pathway, increased nonenzymatic glycation of proteins, activated protein kinase C with increased vasodilatory prostaglandins, and increased production of growth factors in the retina. The risk of progression, associated with the severity of individual lesions from photographic grading has been quantified by the ETDRS and a seven level classification has been devised: No retinopathy, Minimal, Mild, Moderate and Severe NPDR, PDR and High-Risk PDR. (4)

Diabetic retinopathy can be graded with the Early Treatment Diabetic Retinopathy Scale (ETDRS)-

- International Clinical Diabetic Retinopathy and Diabetic Macula Oedema Disease Severity Scale-
- Mild NPDR: Microaneurysms only
- Moderate NPDR: More than just microaneurysms but less than severe NPDR
- Severe NPDR: Any of the following:
  1. More than 20 intraretinal haemorrhages in each of 4 quadrants
  2. Definite venous beading in 2 or more quadrants
  3. Prominent intraretinal microvascular abnormalities in 1 or more quadrants
- Proliferative DR (PDR): One of the following:
  1. Neovascularisation
  2. Vitreous/preretinal haemorrhage

Advanced Diabetic Eye Disease (ADED)

- One of the following:
  1. Formation of fibrovascular tissue proliferation
  2. Traction retinal detachment due to formation of posterior vitreous detachment
  3. Dragging of retinal/distortion
  4. Rhegmatogenous retinal detachment

Macula Oedema Findings on Ophthalmoscopy:
- Mild – some retinal thickening or hard exudates in posterior pole but distant from the macula
- Moderate – retinal thickening or hard exudates approaching the centre of the macula but not involving the centre
- Severe – retinal thickening or hard exudates involving the centre of the macula

It should be mandatory to screen patients with diabetes for retinopathy on a regular basis. As a norm, patients with type I diabetes, who have not yet developed changes of retinopathy are screened every second year, while the corresponding patients with type II diabetes are screened every third year. When retinopathy is detected, the screening is performed more frequently.

Special attention needs to be given to the modifiable risk factors – such as glycaemic control, hypertension and lipids in the management of diabetic retinopathy (4, 5). Better glycaemic control reduces risks of microvascular complications(7). Closer follow-ups should be scheduled, once retinopathy changes are evident.

The role of pupil dilatation in fundus evaluation for screening cannot be exaggerated. Short-term pupil dilatation with tropicamide 0.5% eye drops is safe, and patient acceptance is very high. With sunglasses, most people can drive safely after pupils are dilated. Fluorescein angiography as a tool for screening in diabetic retinopathy is inappropriate, as it is invasive and has a risk of complications. Where patient compliance is a concern, and where retinopathy is progressive, retinal laser photocoagulation can be given due consideration. Pan Retinal photocoagulation (PRP) laser treatment reduces the risk of vision loss in PDR. Intravitreal Anti VEGF injections can be useful in proliferative diabetic retinopathy e.g. it can be given before contemplating vitrectomy or if there is vitreous haemorrhage. Improved visual results have been reported during the last 20 years following vitrectomy, the most recent being from Yorston [8]. Prior to vitrectomy, PRP should always be attempted to reduce activity of new vessels as much as possible.

Conclusion:

Diabetic retinopathy is a major health problem in patients with type 2 diabetes, with diverse health and economic implications. The key to reducing visual loss and blindness from diabetic retinopathy is early detection by regular eye examination. The duration of diabetes and glycaemic control are independent risk factors for severity and progression of diabetic retinopathy. In our study, the prevalence of diabetic retinopathy in urban South Indian population is 48.64% and is strongly associated with hypertension.

This study intends to outline the prevalence of retinopathy in a cohort of South Indian diabetic patients attending the ophthalmology opd, who were screened for retinopathy irrespective of the presence of visual symptoms or the duration of diabetes. Effort should be made to control hyperglycemia and hypertension tightly by appropriate therapeutic measures, so that the occurrence and worsening of the retinopathy can be alleviated. Diabetic eye disease is a significant problem and we recommend routine screening be implemented for diabetic retinopathy at medical and diabetic clinics.
REFERENCE