

FREQUENCY OF DIABETIC RETINOPATHY AMONG DIALYSIS PATIENTS AND THEIR AWARENESS ABOUT THE NEED FOR SCREENING TO PREVENT BLINDNESS

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ABSTRACT

Objective: To observe frequency and spectrum of diabetic retinopathy among patients undergoing haemodialysis and to assess the awareness of importance of ophthalmic screening among these patients.

Study Design: Observational descriptive study.

Place and Duration of Study: The study was carried out at Combined Military Hospital Kharian, from August 2011 to January 2012.

Patients and Methods: A total of 49 patients were included in the study who were under going maintenance hemodialysis during the observation period. All patients were examined with ophthalmoscope after mydriasis. Patients who were not willing, irritable or in coma were not included in the study.

Results: A total of 49 patients (n=49) were examined with 26 males and 13 females. Age of patients with diabetic retinopathy ranged from 45 years to 68 years, mean age of patients was 57.5 years. Nineteen patient (38.7%) were suffering from diabetes mellitus. Four had been operated for cataract out of which only one was advised regular follow up for effect of diabetes on vision. Only one patient who was UK national was aware of the need and importance of regular eye examination to avoid preventable blindness and to monitor for end organ damage.

Conclusion: These results indicate that hospital needs integrated diabetic clinics for patient awareness and management to prevent blindness due to diabetic retinopathy. In fact, Pakistan needs a national level retinopathy screening programme keeping in mind the increasing incidence of diabetes mellitus. National programme for retinopathy is doable as fundus cameras are widely available and can be operated by optometrists and integrated care protocols between different departments to avoid financial burden of care for diabetic geriatric patients.

Keywords: Diabetic retinopathy, dialysis, fundoscopy, integrated care protocols, national screening

INTRODUCTION

Diabetes mellitus (DM) is a metabolic syndrome due to lack of or reduced effectiveness of endogenous insulin, leading to increasing blood glucose levels and abnormal metabolism of carbohydrates and lipids. It is a non-communicable disease (NCD) listed along with heart diseases, cancer, stroke and chronic respiratory diseases. Non-insulin dependent diabetes mellitus (NIDDM) is more common and is preventable, while insulin dependent diabetes mellitus (IDDM) is not yet preventable. The disease burden is increasing globally particularly in developing countries with rising morbidity and mortality world over. According to W.H.O. estimates in 1995, 4.3 million people in Pakistan

had diabetes mellitus. It will swell up to 11.6 million by the year 2025¹. Diabetes Mellitus is a leading non communicable disease responsible for blindness, renal failure and non-traumatic amputations².

Diabetes mellitus has achieved epidemic proportion exceeding the projected incidence of W.H.O. in less than two decades. A press release of World Health Organization in 1998 predicted global burden of DM to increase by 122% from 135 million to reach 300 million people in 2025³. But diabetes had already affected 347 million in 2011⁴. WHO projects that diabetes will be the 7th leading cause of death in 2030⁵.

Prevalence of diabetes in Pakistan ranges from 7.6% to 11%⁶. According to Pakistan national blindness survey the prevalence of blindness in adults older than 30 years of age is 27% out of these, 15.3% have diabetic retinopathy (DR)⁷. Study at a tertiary care eye hospital in

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Karachi revealed that DR is the leading cause of retinal disease and causing blindness in 39.8% patients attending the retina clinic⁸. This is accompanied with increasing burden of “silent” Chronic Kidney Disease (CKD) patients requiring dialysis with increasing morbidity and mortality. We wanted to see the frequency of DR among dialysis patients as DR and diabetic nephropathy (DN) are correlated⁹. About 20% to 40% diabetic patients develop nephropathy.

PATIENTS AND METHODS

This observational descriptive study was carried out at dialysis unit of Combined Military Hospital Kharian from August 2011 to January 2012. It is a tertiary care hospital catering for armed forces personnel, their dependents and local civil population. Non-consecutive patients on maintenance hemo dialysis (HD) were examined. Unwilling, irritable patients and emergency dialysis patients were excluded from the study. Informed consent was obtained from the patients. Fundus examination was carried out with ophthalmoscope after mydriasis. Mydriasis was achieved by using 1% tropicamide and 10% phenylephrine eye drops. Classification of retinopathy was based on findings of the worst eye. Diabetic retinopathy was clinically graded based on descriptive categories, namely background retinopathy, diabetic maculopathy, pre proliferative, proliferative and advanced diabetic retinopathy which includes vitreous hemorrhage, rubeosis or rubeotic glaucoma. Patients were inquired about their last visit to the ophthalmologist and their awareness about the importance of regular check up to prevent blindness.

RESULTS

A total of 49 patients were examined out of which nineteen were diabetic (38.7%) and thirty (61.2%) were non diabetics. Age of diabetics ranged from 45 years to 68 years (mean 57.5 years). Of diabetic patients, eleven were males and nine were females. All diabetics had diabetic retinopathy. Four patients (21%) had background diabetic retinopathy. Nine out of nineteen (47.3%)

had pre-proliferative and six (31.5%) had advanced diabetic retinopathy in the worst eye, with four having vitreous hemorrhage and two rubeotic glaucoma. Diabetic maculopathy was not seen in isolation. Thirteen patients had diabetes and hypertension (68.4%) and six (31.5%) had only diabetes. Four had been operated for cataracts with intraocular lens implantation. Only one patient (from UK) had regular eye

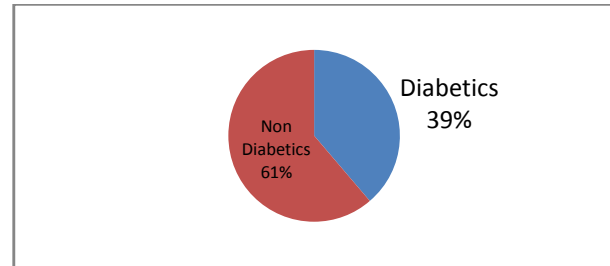


Figure-1: Pattern of distribution of dialysis patients in diabetic and non diabetic groups.

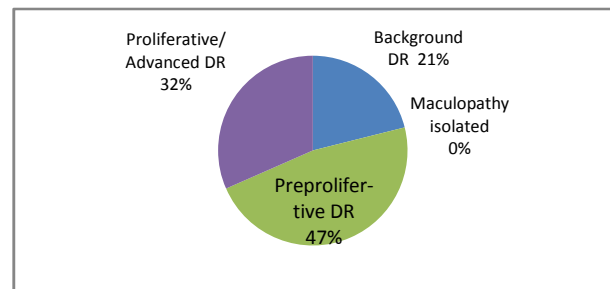


Figure-2: Percentages of diabetic retinopathy (DR) in the diabetic patients.

examination for DR, though he developed vitreous hemorrhage during cataract surgery. None of the other patients consulted eye specialist because there was no disturbance of vision. Only one patient was aware of the need for regular eye examination.

DISCUSSION

Diabetes mellitus causes multi-organ damage. DM is one of leading causes of preventable blindness which has high potential to aggravate poverty of the effected individuals as well as their families¹⁰. Diabetes related end organ damage like nephropathy was also

expected to triple in Pakistan in two decades as noted in a study carried out in 2006 which also highlighted the financial burden of expensive hemodialysis¹¹. Our study revealed that patients did not have regular eye examination after being diagnosed as diabetic and only consulted eye specialist when they developed impaired vision. Proliferative DR is highly specific indicator for nephropathy and thus diabetic retinopathy is useful in screening not for NIDDM¹² but it is more significant in IDDM¹³.

It is now increasingly possible to diagnose and treat DR in major government hospitals and almost all private eye hospitals in Pakistan, though it has not yet received as much government attention as the disease requires. Repeated Pakistan national diabetes surveys have shown that despite ethnic and geographical variation, all Pakistanis carry a high risk of DM. In fact, for every one diagnosed case of DM two remain undiagnosed and three have impaired glucose tolerance¹⁴. It was observed in a 2007 study that government sector hospitals in Sind now have 100% diagnosis facility with 85% LASER facility, up from 50% functional lasers noted in 1998¹⁵. Dedicated endocrinology units are being established in state and private hospitals which can act as nodal points for integrated care protocols.

In our study a difference of about 10 years was noted between the mean age of diabetic and non diabetic patients showing that elderly patients are more at risk of diabetic nephropathy. In one study in Qatar, DR was diagnosed in 113 patients (45%) undergoing hemodialysis. In comparison to non-diabetics, DR patients were older as in our study¹⁶. A study done on dialysis patients in Pakistan in 1995 revealed that 37.4% of dialysis patients had diabetes mellitus. There were three cases of DM (4.68%) alone and 21 cases of DM and hypertension (32.8%) out of 64 patients¹⁷. In our study twelve out of 49 diabetic patients had DM and Hypertension (24.4%). Only 3 had DM alone (6.1%). Our study carried out after about 16 years has shown increase in

frequency of diabetic patients warranting need for multiple, larger cohort studies.

In our study, all patients were NIDDM. Patients with pre-proliferative DR and proliferative DR comprised 78.9% and 21% had maculopathy with BGDR. Study by Wolf, Muller, Mandecka and Muller revealed that absence of DR in patients with type 2 DM does not imply that renal abnormalities, including nephropathy are also absent. Their study also revealed that DR is of more predictive value in IDDM than NIDDM¹⁸. Our study was to evaluate for diabetic retinopathy alone but frequent complete ocular examination is advised.

Our study was limited to observation of DR. However, uremic state and comorbid in chronic kidney disease patients like chronically elevated calcium-phosphate products can cause diverse eye conditions like band keratopathy, ischemic optic neuropathy, elevated intraocular pressure, retinal detachment, and retinal hemorrhage. Their early recognition and the fact that these may threaten a patient's vision should encourage team work between nephrology and eye department for deciding which patients require urgent consultation with an ophthalmologist²⁰.

Nurses in medical OPDs and dialysis center can act as team members for screening by checking vision by charts and increase awareness by distributing brochures²¹.

CONCLUSION

All Diabetic patients (38.7%) had diabetic retinopathy. Diabetic patients did not consult eye specialist because they did not have any visual problem and this was the major cause for the delay in consultation and complication of DR.

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