

GENDER SPECIFIC DISTRIBUTION OF DIFFERENT PATTERNS OF DIABETIC RETINOPATHY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS. A RETROSPECTIVE CROSS-SECTIONAL STUDY FROM A TERTIARY CARE SPECIALIZED CENTER IN LAHORE, PAKISTAN

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ABSTRACT

Background: The patients of diabetic retinopathy are not aware of early retinal vascular dysfunction, which is a feature of diabetic retinopathy.

Objective: This study aimed to detect the different patterns of diabetic retinopathy and distribution in different genders, in a tertiary care specialized center.

Methods: Consecutive patients attending the Diabetes Endocrine and Metabolic Center (DEMC) were consented and examined for a period of six months. Direct and indirect ophthalmoscopes were used by an ophthalmologist for fundus examination. Grading of the retinopathy patterns was done by International Clinical Diabetic Retinopathy Disease Severity Scale (ICDRSS). The data was analyzed using SPSS version 23.

Results: A total number of 250 patients were examined during the six months period of study. The frequency of diabetic retinopathy was more in females as compared to males. The incidence of non-proliferative diabetic retinopathy was more in males as compared to females, and the prevalence of proliferative diabetic retinopathy was same in both genders. Greater number of females had clinically significant macular edema and advance diabetic retinopathy was observed in only males.

Conclusion: Diabetic retinopathy (DR) is common in our setup, with different genders having different prevalence of eye problems. A screening strategy system is needed to develop for the early detection and treatment of preventable cause of blindness in patients with type2 diabetes mellitus.

Key Words: Distribution, Diabetes Mellitus, Retinopathy, Gender

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INTRODUCTION

Diabetes mellitus is known as a chronic metabolic disorder which is depicted by persistently raised blood glucose levels. According to a study by World Health Organization (WHO), diabetes mellitus had prevailed from 4.7% to 8.55% from 1980 to 2014 in population over 18 years of age. The persistent increase in blood glucose level led to the development of complications of diabetes mellitus which included both micro-vascular and macro-vascular degenerative disorders such as

retinopathy, nephropathy, neuropathy cardiovascular and stroke.¹

Diabetic retinopathy (DR) is of great importance and concern because the current studies showed that prevalence and incidence of diabetes mellitus Type 2 was anticipated to rise during the next decades.² Due to step-up advances in early detection and prevention of diabetic retinopathy, there was a raised demand for DR treatment services.³ Patients of DR were generally incognizant of the developing early retinal vascular damage and changes which was also a characteristics of DR. Floaters or hazy vision were visual symptoms of DR that often transpire in more advanced stages, such as proliferative DR or clinically significant macular edema(CSME).⁴ Early stage of diabetic retinopathy was Non-proliferative diabetic retinopathy(NPDR). Automatic detection of NPDR is significant for clinical diagnosis, early screening and serial progression of disease in patients with DM.⁵Proliferative diabetic

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retinopathy (PDR) was depicted by formation of new vessels originating from the retina and optic disc which is known as neo-vascularization, in patients with uncontrolled blood sugar levels for a long period of time in diabetes mellitus.⁶ Diabetic macular edema (DME) was a thickening of the macula, an area slightly lateral to the center of retina, which led to loss of vision. The most hellacious form of DME was Clinically Significant Macular Edema (CSME).⁷ One of the concerns of this study was cost effectiveness of screening programs regarding diabetes related eye diseases.⁸

A study was done at Aminu Kano Teaching Hospital, Kano, Nigeria in 2012 which showed the distribution of diabetic retinopathy among males and females. Total number of patients were 214. 88 males and 126 females (M:F=1:1.43) were included in that study. However, total number of subjects was small in this study.⁹ Lin J-C et al¹⁰ conducted study in Taiwan; on 2926 cases of patients with DR among 63,582 patients with diabetes mellitus type 2. They described the changing trends through these years and examined whether the gender specific variation existed. Our study is from a totally different part of the world, where socio economic condition and provision of health services are compromised. Also lack of education, non availability of independent resources, lack of reflection of health in annual government budget and no access to specialized centers play pivotal role. This became all the more important to conduct this study in our circumstances.

In Pakistan diabetic retinopathy is affecting a large number of diabetic patients but evidence is lacking locally, as very few number of researches has been carried out, and the data available is not sufficient and not properly documented, specially from a specialized center where resources were available. We conducted this study to determine distribution of diabetic retinopathy according to gender on a large group of patients. This study would help us to know the different patterns of retinopathy in patients attending Diabetes Endocrine and Metabolic Center (DEMC) which included NPDR, PDR, CSME, ADVDR and distribution of the disease in different genders. This could also help the health care providers to establish screening programs and providing effective care to the diabetic patients to decrease the incidence of preventable causes of blindness which was cost effective.

METHODS

Consecutive patients who were attending DEMC and consented, for a period of six months, from January 2017 to June 2017, were selected and examined for the

study. On a routine, 100 to 150 patients attend DEMC on a day, and their fundus **was** checked on first visit, unless there **was** a contraindication. An optometrist **was** available six days in week, with a non mydriatic fundus photograph camera, for examination of fundus. Direct and indirect ophthalmoscopes were used and this fundus camera, by an optometrist. International Clinical Diabetic Retinopathy Disease Severity Scale (ICDRDSS) was used for grading the retinopathy. The data was analyzed using SPSS version 23.

After careful examination, only those patients between the ages of 15 to 90 were selected, from both genders. Only those having retinopathy findings, were included, and those without them, were not. It meant that a large portion without retinal findings was excluded. Presence of eye complication, restricting fundus photo were also excluded. All those with any other complication were included.

RESULTS

The total number of patients included in the study was 250, as they had positive findings, during the study period. Diabetic retinopathy was found more commonly in females as compared to males (**Figure 1 and 2**). The non-proliferative diabetic retinopathy was more in males as compared to females, but the proliferative diabetic retinopathy remained same in both genders. However, greater number of females had clinically significant macular edema and advance diabetic retinopathy was observed in only 4 males.

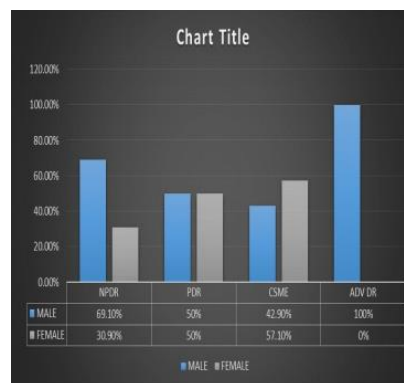


Figure 1:

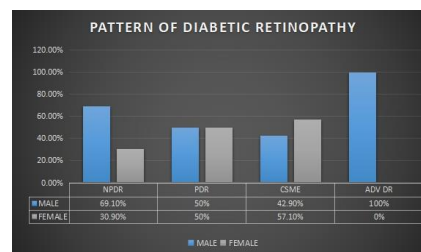


Figure 2:

DISCUSSION

Diabetic retinopathy is one of the long-term consequences and complications of the ocular manifestation of diabetes mellitus. It is a vision threatening disease particularly with long disease duration and poor control of blood sugar levels. Luckily salutary and beneficial advances have occurred regarding the prevention and treatment of the disease by understanding the risk factors, underlying pathology and functional disability caused by diabetic retinopathy.

DR is of particular concern because of increasing incidence and advances in early detection, making it a preventable cause of blindness. Because of rapidly changing trends of DM and DR, there is strong rationale to update the current patterns of DR in sex specified population. Most of the patients attending the diabetic, metabolic and endocrine clinic are not aware, that the visual symptoms they are suffering from are due to an isolate eye disease or long-term consequences of diabetes.

Alba Aguada et-al did a study that multi-morbidity has great influence on health care provision in patients with type2 diabetes mellitus. A multi-morbidity network in the general population was constructed in distinction to age and gender. These networks were showing strong communication between T2DM and retinopathy, nephropathy, neuropathy and pancreas cancer.¹¹ Our study did not address any of these features. However, it was similar to this study in respect to emphasizing the importance of getting a structured screening program for DR.

In 2012, Aminu Kano Teaching Hospital, Kano, Nigeria carried out a study which showed the distribution of diabetic retinopathy among males and females. Total number of patients were 214. Males and females were in ratio of M:F= 1:1.43 with number of 88 males and 126 females. However, total number was too small included in this study.¹² Our Study is similar to this study, as it shows patterns in both sex, with almost similar number of patients. However, it is more informative, as it further splits different types of DR, helping us in understanding gender distribution of advanced retinopathy.

Lin J-C et al¹³ conducted study in Taiwan; out of 63,582 patients with T2DM attending diabetic clinic, 2926 were having DR. They described the changing trends through these years and examined whether the gender specific variation existed. Our study is much smaller than this study. but it also shows similar trends in gender, in a different geological environment.

Our study analyzed gender based distribution of different patterns of diabetic retinopathy in patients with

totally different ethnicity and in that part of world with limited health care resources. This data might help to identify settings and subgroups of populations where DR is going in higher trends and help to set screening priorities and programs for prevention, early detection, optimized resources allocation and orient future to fill knowledge gaps.

LIMITATIONS:

There were certain limitations in our study. First, it just included a very small number of patients. Results could have been different if larger number of patients were screened. Second, it only assessed the gender distribution. Endurance of Diabetes, Control, and either other complications exist or not could have given us a better idea about the factors contributing to these findings. Third, if we had included the frequency of routine screening in these patients, it would have been very helpful in drawing conclusion on that also.

CONCLUSION

Diabetic retinopathy is one of the leading cause of blindness in our setup particularly with long term subsistence of DM. Diabetic retinopathy is avert cause of blindness thus outgrowth of screening programs is in demand for the early detection of the disease, and to offer better treatment.

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ETHICAL APPROVAL:

The study was approved from Ethical Review Committee of Postgraduate Medical Institute, Lahore, Pakistan.

AUTHORS' CONTRIBUTION:

MIHK: Idea, discussion, over all supervision

AW: Introduction, discussion, data collection

RA: Methods, discussion, data collection

UA: Results, statistical analysis

AT, II: Introduction, data analysis and collection

FZ: Introduction

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