

Visual Loss Due to Retinal Disorders: A study on 1496 Cases

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ABSTRACT

Objective: The aim of this hospital based study is to ascertain the frequency of various retinopathies in the upper Sindh.

Study Design: quasi experimental study

Place and Duration of Study: This study was conducted at the CMC and KMC for duration of January, 2016 to January, 2021 for a period of 5 years.

Materials and Methods: Patients with retinal disorders were selected as they came to the OPD for checkup or were referred to from other centers. A complete history and ocular examination along with biochemical test and radiological investigations were thoroughly carried out at the institution with strict protocols being followed at every step. Data was collected accordingly and analyzed using SPSS. All the data was quantitative and hence represented as frequency and percentage.

Results: A total of 1496 patients were included in the study that were diagnosed with retinal disorders, 963 (64.37%) Male and 533 (35.62%) Female aged between 3-92 years. 625 (41.77%) Patients had diabetic retinopathy in which 234 had Non-Proliferative Diabetic Retinopathy, 216 had Proliferative Diabetic Retinopathy, and 387 had clinically significant macular Edema. Retinal Vein occlusion was found in 116 (7.75%) of the patients in which 73 had Central Retinal Vein Occlusion, 34 Branch Retinal Vein Occlusion, and 9 had Hemiretinal Vein Occlusion. Central Serous Chorioretinopathy was seen in 102 (6.81%) of patients aged 17-55 years. Retinal Vasculitis was seen in 70 (4.67%) patients aged 16-60 years.

Conclusion: Diabetic Retinopathy was amongst the most prevalent retinal vein disorder. Others in high frequency included retinal vein occlusion, Central Serous Chorioretinopathy, and Retinal Vasculitis.

Key Words: Retinal Disorders, Diabetic Retinopathy, Retinal Vein Occlusion, Chorioretinopathy

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INTRODUCTION

The retina is a component of the eyes that is 0.5mm in thickness and lies at the back of the eye. The retina is the part of the eye that produces sight as it contains the necessary sensory nerve fibers which can transmit light into electrical signals that are then conveyed to the brain by the optic nerve (CN II). More than 60 types of distant neurons are inhabited by the retina, each playing

a specific role in the processing and development of visual images¹. Unfortunately, visual impairment is a very damning issue in the world. Visual impairment and visual loss can occur through many reason, one of these reasons is retinal diseases. It is unfortunate that in developing countries prevention measures are inadequate for retinal disorders. The reason is due to the fact that retinal disorders are considered to be an uncommon cause in the developing nations². In Pakistan even the leading cause of blindness is not said to be from retinal disorders, but it is because of cataract. In a national survey on blindness in Pakistan conducted in 2004-05 stated that 53% cataract related blindness existed³. Previously a greater chunk of proportion was taken up by cataract as the leading cause of visual impairment and blindness globally with WHO stating that 51% of 285 million people visually impaired globally were due to cataracts^{4,5}. Advancement in surgical correction, treatment, and prevention of cataract has reduced its prevalence, however, the prevalence rate and burden of disease has however increased for retinal disorders globally. Retinal diseases are on the horizon, especially in diabetic individuals. In Pakistan, when the second national disease survey for prevalence of blindness was conducted in 2004-05 posterior segment diseases were said to be responsible

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for 9.5% of total blindness, as compared to 5.4% in the first national survey that took place in 1990. Furthermore, retinal disorders prevalence found in population based surveys in Iran and India showed a prevalence of 8.56% and 12.7% 7-8. There are many retinal diseases and their prevalence is different in different demographic. Our aim is to deduce the frequency of various retinopathies among patients that presented to the retinal clinic of Khairpur Medical College.

MATERIALS AND METHODS

A longitudinal study was conducted on patients coming to the Outpatient department (OPD) or being referred to from other centers at CMC and KMC for duration of 1st January 2016 to 1st January 2021. The study was approved from the institutional review board for ethical approval after which it was then conducted. All patients that had retinal findings were selected for the study and further evaluated and investigated. Before the inclusion of the patients in this study, informed consent were taken regarding their participation in the study and were also assured that they can easily leave the study if they choose to do so without the risk of any hindrance in their future treatment. A proper history of the duration of the disease, any other comorbidities, family history, and past treatment related to the disease was taken by a well-qualified ophthalmologist. A complete ocular examination consisting of visual acuity, slit lamp examination, gonioscopy, fundus examination, and applanation tonometry was carried out. Furthermore, additional biochemical laboratory tests were also conducted which included CBC, ESR, peripheral blood smear, RBS, LHbA1c, Lipid profile, serum calcium levels, VDRL, FTA-ABS, ANA, RA Factor, ACE, and Montaux Test. Radiological examination included a chest radiograph along with a radiograph of the sacroiliac joint also being done. Ultrasound and Fundus Fluorescein Angiography was also conducted where required. Data was recorded and analyzed using SPSS version 20.0. All the data was quantitative and represented in frequency and percentage.

RESULTS

A total of 1496 patients that consented to be part of the study and attended the retina clinic were included in the study. Out of the 1496 that attended 963 (64.37%) were male and 533 (35.62%) were female. The age of the patients ranged from 3-92 years.

Table 1: Shows the number of patients with Diabetic Retinopathy. Advanced Diabetic Eye Diseases were found in 113 eyes.

Table 2: Shows the number of patients with Retinal Vein Occlusion.

Table 3: Shows the number of patients with Macular Hole degeneration due to hypertensive changes and myopic changes

Table 4: Shows the number of patients with Retinal artery occlusion.

Table No.1: Shows the number of patients with Diabetic Retinopathy

| Diabetic Retinopathy | | Aged: 20-75 years |
|---|---------------|--------------------------|
| No. Of Patients | 625 (41.77%0) | |
| Male | 376 | |
| Female | 249 | |
| No. Of Eyes | 950 | |
| Non-proliferative Diabetic Retinopathy (NPDR) | 234 | |
| Proliferative Diabetic Retinopathy (PDR) | 216 | |
| Clinically Significant Macular Edema (CSMO) | 387 | |

Table No.2: Shows the number of patients with Retinal Vein Occlusion

| Retinal Vein occlusion | |
|---|------------|
| No of Patients: 116 (7.75%0 Aged 18-80 years) | |
| Male: 67 | Female: 49 |
| Central Retinal Vein Occlusion | |
| No of Patients: 73 | |
| Male: 44 | Female:29 |
| Branch Retinal Vein Occlusion | |
| No of Patients: 34 | |
| Male: 16 | Female: 18 |
| Hemiretinal Vein Occlusion | |
| No of Patients: 9 | |
| Male: 7 | Female: 2 |

Table No.3: Shows the number of patients with Macular Hole degeneration due to hypertensive changes and myopic changes

| Macular Hole | |
|---------------------------------|---------------------|
| No of Patients | 15 aged 22-65 years |
| Male: 4 | Female: 11 |
| Hypertensive Retinopathy | |
| No of Patients | 9 aged 12-66 years |
| Male: 7 | Female: 2 |
| Myopic Degeneration | |
| No of Patients | 9 aged 15-50 years |
| Male: 5 | Female: 4 |

Table No.4: Shows the number of patients with Retinal artery occlusion

| Retinal Artery Occlusion | |
|---|----------------------------|
| No of Patients | 8 (0.53%) Aged 20-60 years |
| Male: 5 | Female: 3 |
| Central Retinal Artery Occlusion | |
| Male: 4 | Female: NIL |
| Branch Retinal Artery Occlusion | |
| Male: 3 | Female: 1 |

Central serous Chorioretinopathy (CSCR) was found in 102(6.81%) patients between the age of 17-55 years in 113 eyes, 88 were male patients whereas 14 were

female patients. 69 (4.61%) patients showed macular degeneration aged 50-90 years in 137 eyes, 40 were male and 29 were female. Retinal Vasculitis was seen in 70 (4.67%) of patients aged 16-60 years in 115 eyes among which were 68 male and 8 female. Retinitis pigmentosa was seen 53 (3.54%) patients aged 3-70 years.

DISCUSSION

Visual loss is a common issue faced globally, with enormous amounts being invested into public health care and treatment to improve vision and quality of life. However, visual loss still remains high. The estimated global prevalence of retinal disorders is said to be 1 in 3000 individuals 9. Retinal disorders are also inherited with retinitis pigmentosa being the most frequent phenotype among retinal disorders with every 1 in 4000 individuals being affected due to it 10. Our study also saw 3.54% of patients having retinitis pigmentosa. Retinal disorders are not well defined in Pakistan in terms of frequency however, autosomal retinitis pigmentosa is said to be the most prevalent 11. The consanguinity of marriages is said to be a high factor leading to the development of autosomal disorders and this is also true for the country of Pakistan in which 60% marriages are consanguineous 12. Diabetic Retinopathy was the most prevalent retinal disorder in our study with 625 (41.77%) individuals suffering from it. Diabetic retinopathy is also the most common cause of blindness in the United States among adults 13. Due to modern day diabetic management and timely intervention with glucocorticoids, laser photocoagulation, and anti-vascular endothelial (VEGT) agents vision threatening diabetic retinopathy can be controlled and can significantly reduce loss of vision 14-16. Retinal vein occlusion was seen in 116 (7.75%) patients, which is another cause of visual impairment. Retinal vein occlusion is the second most common disorder after diabetic retinopathy 17. Previous studies showed a poor prognosis of vision without treatment, however, with the development of VEGT inhibitors a new page has turned in the management of retinal vein occlusion 18-20. CSCR was the third most common retinal vein disorder identified in our study with a frequency of 6.81%. The exact pathology of the disease still remains unclear, although ischemia to the choroid and choroidal vascular hyper permeability being implicated as the cause of the disease which can ultimately result in serous macular detachment 21-22. CSCR is more prevalent in Asian population as compared to other demographics such as white and black races 23. Islam et al (2016) identified risk factors in CSCR to be stress, psychiatric illnesses, hypertension, peptic ulcer diseases, use of steroids and other medications 24. Retinal Vasculitis was the fourth most prevalent disorder in our study. A number of causes are linked to retinal Vasculitis including

autoimmune diseases and infectious diseases 25. Our study didn't identify the particular cause of retinal Vasculitis, future studies can be modified to do so.

CONCLUSION

Diabetic Retinopathy is more frequently seen retinal disorder more commonly in male individuals. Non-Proliferative diabetic Retinopathy is more common. The second common frequent disorder is retinal vein occlusion. CSCR is the third common frequently seen disorder. Retinal Vasculitis is the fourth common frequently seen retinal disorder.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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