



Visual Rehabilitation of Patients with Age Related Macular Degeneration

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Objective: The objectives of this study were to determine the effectiveness of low vision devices for different visual functions in patients with age related macular degeneration.

Introduction: With advances in medicine and life expectancy people are living longer and in most of the advanced countries ARMD is now the leading cause of low vision and blindness. Visual rehabilitation aims at helping the blind and low vision people to perform useful functions necessary in daily life by improving different aspects of visual functions such as visual acuity, contrast sensitivity, colour vision etc.

Methods: It was an institution based descriptive /cross sectional study. A total of 50 patients, male 37 (74%), 13 female (26%) were with severe visual loss due to age related macular degeneration were examined.

Results: After visual rehabilitation contrast sensitivity was improved in 84% of the patients while visual acuity was improved in 78% persons. Glare sensitivity was improved in 62% of the patients. Color vision was improved in only 36% patients while visual field was improved in 24% patients.

Conclusion: Even though in our study only visual acuity, contrast sensitivity and glare sensitivity were improved, standard low-vision rehabilitation programs, conventional in-clinic assessments and low vision devices are effective ways of managing vision loss in ARMD.



Introduction:

Age related macular degeneration (ARMD) is the principal cause of legal blindness/ visual impairment in the developed countries. It occurs in two clinical forms: the serous form the “wet form” with leakage from blood vessels and edema, and the “dry” or the atrophic form. Both forms ultimately lead to a central scotoma. The prevalence varies from 1% in the 65-74 years age group, to 11% in 85+ age group.¹

In ARMD visual functions can be affected in the following ways.

- Severe loss of visual acuity (two levels or more for example: from 6/6 to 6/24).
- Blurred vision: Whereas vision loss may have a rapid onset in people with exudative macular degeneration, those with non-exudative or atrophic type may be asymptomatic or may complain of gradually losing their central vision.
- Dark areas in central visual fields implying no vision (Central scotomas).
- Metamorphopsia (i.e. visual distortion) – best seen by Amsler's grid. The straight lines of the mesh appear wavy and/ or partly absent. Patients usually don't notice this earlier but sometimes may notice it while looking at curtain blinds at home or at work.
- Faulty colour discrimination; specifically dark tones of one colour from dark tones of another and similarly light shades of one colour from light shades of another.
- Faulty dark adaptation i.e. sluggish recovery of visual functions from exposure to intense light.
- Gradually decreasing contrast sensitivity.

In the USA, at least 10% of the population between 65 and 75 years of age has some impairment of central vision that can be attributed to ARMD. After this there is rapid increase in prevalence and among those over 75 years, 30% are affected to some degree. End stage age related macular degeneration occurs in about 1.7% of all individuals aged over 50 years and in about 18% of those over 85 years.²

The developing countries show prevalence that varies not only from country to country but within a country as well e.g. within India it varies from 1.8% to 4.7% while that in other countries of the region (Pakistan, Bangladesh and Nepal) report figures ranging from 2.1% to 8.7% for blindness that can be attributed to this disorder. We can safely conclude, therefore, that ARMD is rapidly becoming an important etiological factor of blindness and visual impairment in

developing countries as well.³

There are many ways to manage visual loss in ARMD but filters fitted into spectacles have been used as one of the most useful and commonly used visual aid for people with macular degeneration. The filters basically aim both at reducing short-wavelength light to reduce glare and identifying different colours (which is actually light with different wavelengths) preferred by the patient for viewing. Both of these strategies lead to some degree of improvement in the contrast sensitivity and better visual functions.⁴

Visual Rehabilitation is a part of comprehensive eye care comprising two essential processes – training and counseling – that help the visually impaired/ blind persons in the development of skills and strategies necessary for their efforts to lead an independent and dignified life.⁵

In the management of low vision establishment of Standard low-vision rehabilitation programs coupled with routine clinical assessments, and dispensing of optical and non optical low vision aids are effective in helping people with low vision to cope with vision loss. However there is a need to determine the particular types of rehabilitative strategies and Low Vision aids that can be most effective along with development of assistive technologies that can be matched with the individual's requirements, both visual as well as environmental (outdoors, vocational, educational etc.)⁶

In 2007 Lamoureux recruited a group of old people with visual loss (mean age, 80.3 years). 124 women and 68 men out of that group completed rehabilitation. 62% (n=119) of the participants had age-related macular degeneration and 78% (n=149) had moderate to severe visual impairment (<6/18 Snellen). After rehabilitation, significant improvements ($p<0.05$) were observed both in the overall Impact of Vision Impairment (IVI) score as well as in two sub-categories i.e. reading/ accessing information and emotional well being.⁷

Low vision rehabilitation programme results not only in improved visual functions physically, but also in better functional capability and quality of life, as low vision has been known to be associated with increased risk of developing depression with impaired functional status and quality of life.⁸

The main aim of a low vision program should be attainment of reduced levels of difficulty in performing a particular task or achieving a goal, or decreasing the significance of one task by training a person in an alternative method to accomplish the same task or goal.⁹

Patients of low vision themselves recognize the importance of low vision services. Scott studied the success



of low vision care at Bascom Palmar Eye Institute. More than 98% of the participants reported improvements with low vision care and 53.2% termed them as being "very useful". It was, therefore, concluded that rehabilitative services for visual impairment are associated with high levels of client satisfaction.¹⁰ Similarly Shaaban and colleagues confirmed the importance of comprehensive low vision rehabilitative services concluding that there was improvement in the visual performance of patients with low vision who were prescribed and taught the use of Low vision aids and this improvement was significantly associated with greater patient satisfaction.¹¹

Dineen, in The Pakistan National Blindness and Visual Impairment Survey, found that 2.8% of all blindness in Pakistan was due to macular degeneration (no mention was made of whether it was age-related or otherwise). People with presenting VA of 3/60 to 6/60 in the better eye (i.e. having severe visual impairment) accounted for a similar percentage (2%). Those with VA 6/60 to 6/18 (Visual impairment) were 1% while 0.5% had presenting VA of 6/18 or better (Normal). There was no regional predilection in the prevalence of treated macular degeneration as among the four provinces, Baluchistan had a prevalence of 1.0%, Khyber Pakhtunkhwa 1.2%, Punjab 1.0% and Sindh 0.8%.¹²

Objectives of the Study:

The objectives of this study were:

1. To find out the effectiveness of low vision devices for different visual functions in patients with age related macular degeneration.
2. To highlight the importance of visual rehabilitation in ARMD.

Methodology

Population: patients with age related macular degeneration

Sampling method: Non probability convenient study.

Sample size: 50 patients (male / female) with age related macular degeneration.

Study design: Descriptive /observational case series.

Results:

The results of this study showed that overall visual acuity improvement occurred in 78% (n=36) patients while

contrast sensitivity improvement occurred in 84% (n=42) patients. Regarding color vision it was observed that 30% (n=15) patient were with normal color vision. 70% (n=35) patients were with defective color vision, out of which only 8.6% (n=3) patients showed improvement while 91.4% (n=32) did not show any improvement in color vision.

28% patients were with normal glare sensitivity while 72% patients were with defective glare sensitivity, out of which almost half patients showed improvement.

82% (n=41) patients were with defective visual field, out of which only 6% patients showed improvement while 76% did not show any improvement in visual field after rehabilitation.

Discussion:

According to my study there are many strategies to effectively manage visual impairment of patients with age related macular degeneration (ARMD) and help them live with the handicap. These include conventional low-vision assessments, standard rehabilitation programs at specialized clinics, with prescription and dispensing of low vision devices.

The current study also concurred with the study conducted by Shaban who observed that the prescription and training on the use of Low vision devices resulted in significant improvement in the visual functions of patients with ARMD. He concluded that low vision rehabilitative services were of immense importance for these patients.¹¹

So my study well correlates with above studies as low vision aids were effective means of providing visual rehabilitation in patients with ARMD. There was significant increase in visual acuity, contrast sensitivity and glare sensitivity after rehabilitation. Visual fields were not improved significantly due to unavailability of certain devices. But other studies indicate that visual field can be improved with some devices such as Fresnel prisms and mirror based system. Both optical and non optical devices were equally important in visual rehabilitation of patients with ARMD.

Recommendations:

1. All visually impaired patients with ARMD should be referred to low vision clinic for proper management and counseling.
2. There should be proper low vision clinics with complete



availability of low vision devices at least in all tertiary hospitals.

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