THE DISTRIBUTION OF PRESBYOPIA IN THE EYE CLINIC OF THE EASTERN NIGERIA MEDICAL CENTER ENUGU

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SUMMARY

Objective: As few data on presbyopia among Nigerians is available, it was decided to review the distribution and characteristics of presbyopia in a Nigerian private eye clinic population.

Methods: Patients presenting for the first time with symptoms of presbyopia in the eye clinic of the Eastern Nigeria Medical Center, Enugu were recruited. Standard methods of assessment of the refraction for both distance and near were used to arrive at each patient's presbyopic correction.

Results: The mean age at first presentation with symptoms of presbyopia was found to be 39 ± 0.5 years; slightly earlier in females (34.9 ± 0.8 years) than for the males(42.0 ± 0.7 years); and a wide range of ages (25 to 78 years) at first presentation. The mean power of plus lens required by the patients was found to be 2.1 ± 0.1D (males 2.1 ± 0.2D and females 1.8 ± 0.2D) with a wide range of individual variation (1.0 ± 0.6D to 3.0 ±1.7D).

Conclusion: Nigerian presbyopes at first presentation require higher power plus lenses than Caucasians of comparable age.

There is a need for a study of a larger series to establish the Nigerian standards as results obtained from other populations may be inappropriate. The wide variation of required lens power noted emphasizes the need for the individualization of presbyopic correction rather than prescription based on assumed changes with age.

Key Words: Presbyopia, Refraction, Presentation of presbyopia, Age at presbyopia

INTRODUCTION

Presbyopia is not strictly speaking a disease. Rather it is a manifestation of the effects of aging on the accommodation; it is thus a physiological accompaniment of ageing.

Presbyopia is said to exist when, having allowed for one third of a patient's accommodation that should be held in reserve, the near point of accommodation has receded to or beyond 22cm[1]. This is said to occur in an emmetrope between the ages of 40 years and 45 years[1], earlier in a hypermetrope who is uncorrected and later in a myope who may never experience the symptoms of presbyopia even in very old age if his ametropia is up to -3.0D[1, 2]. With their full distance correction on, ametropes are expected to have symptoms of presbyopia between the ages 40 to 45 years.

Most near work is done at 22 to 33cm so that patients whose near point of accommodation has receded to 22cm are constantly working close to their near point with little reserve. Symptoms would then set in.

Experience in our eye clinics suggest that in our population, presbyopia sets in at a rather earlier age and that the initial lens requirement is higher than in the Caucasian races. Also, as presbyopia is gradually progressive, black Nigerian patients would tend to require stronger convex lenses for the amelioration of symptoms of presbyopia than whites of comparable age.

To the author's knowledge, few Nigerian studies have subjected these observations to scientific analysis. It was therefore decided to study the characteristics of patients presenting with the symptoms of presbyopia for the first time using the patients attending the eye clinic of the Eastern Nigerian Medical Center, as a pilot of presbyopes in Nigeria.

MATERIALS AND METHODS

The materials for this study consist of consecutive patients attending the eye clinic of the Eastern Nigeria Medical Center, Enugu who presented with symptoms of presbyopia for the first time between January 1986 and December 1989.

Clinical assessment of these patients included a full history of the presenting complaints and detailed ocular examination. The latter involved examination of the anterior

segment of the eye with focal illumination and slit lamp microscope. The posterior segment is examined with the ophthalmoscope. Ocular motility and abnormalities of convergence were also investigated and their contribution to the symptoms assessed and allowed for. Pathological processes detected were managed as necessary.

Next a detailed objective and subjective refraction was done using a streak retinoscope and a Snell en's chart in a 6meter lane to determine the refraction for distance. The refraction for near work was determined in the following manner with the required distance correction in plane.

First, the patient's near point of accommodation was determined. This was taken to be the point at which the N5 optotype or the smallest optotype the patient can read on the Near Test Types just becomes blurred. The dioptric value of this distance was taken as a practical measure of the patient's available accommodation[1].

Next, the distance from the eye at which the patient prefers to do near work or read was determined by direct questioning. The dioptric value of this distance gives the patient's available accommodation[1]. To this is added a third of the patient's available accommodation earlier determined above. This is the strength of convex lens required for the amelioration of the symptoms of presbyopia in the patient.

This lens is next placed in the trial frame in front of the distance correction if any and the final adjustment in strength made to allow the patient read N5 comfortably. To allow for adequate range, the patient is made to read comfortably within ± 7 to 10cm from the preferred reading position. This last lens is recorded and prescribed as the correction such patient requires for his presbyopia.

The results of the study were manually analyzed with the aid of a pocket calculator.

RESULTS

During the period of the study, 154 patients received their first presbyopic prescription in the eye clinic. Because of inaccurate or unavailable age recording, 15 of these patients were excluded, leaving a balance of 139 patients, 84 males and 55 females. Table 1 gives the distribution of these patients by age and sex.
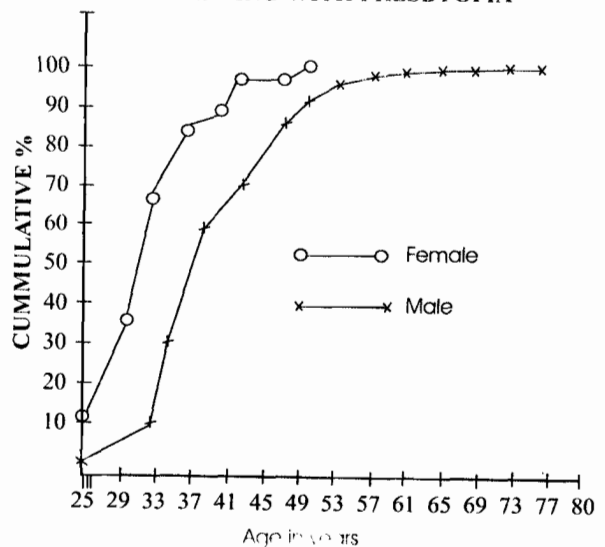
TABLE 1
Distribution of 139 Presbyopia Patients By Age And Sex

Age Group (Years)	Male	Female	Total	%
25-28	3	6	9	6.5
29-32	6	13	19	13.7
33-36	15	19	34	24.5
37-40	25	9	34	24.5
41-44	10	2	12	8.6
45-48	12	5	17	12.1
49-52	6	-	6	4.3
Above 52	7	1	8	5.8
Total	84	55	139	5.8
%	60.4	39.6	100.0	

The peak age at presentation is the 33 to 40 years age group; for males, the peak age at presentation was at the 37 to 40 years age group while it is at the 33 to 36 years age group for females

The mean age at presentation was found to be 39.2 ± 0.5 years (42.0 ± 0.7 years for males and 34.9 ± 0.8 years for females). Females thus ten to present with presbyopia earlier than males, figure 1. It was also seen that a very wide individual variation in age at first presentation exist, the age range being 25 to 78 years.

FIG. 1
CUMMULATIVE % OF PATIENTS PRESENTING WITH PRESBYOPIA

The mean convex lens power required at presentation was found to be 2.1 ± 0.1D (2.1 ± 0.2D for males and 1.8 ± 0.2D fro females). Males generally require more plus power than females. Table 2 gives these computations classified by age group and sex. As expected, there is a gradual increase in lens power with age. The observed sex differences did not reach statistical significance when subjected to the X^2 – test.

TABLE 2
Mean Power Of Convex Lens Required By
Presbyopes Of Various Age Groups And Sex

Age group (Years)	Male	Female	All Sexes
25 – 28	1.00 ± 0.6	1.00 ± 0.6	1.67 ± 0.4
29 – 32	1.75 ± 0.5	1.96 ± 0.4	1.90 ± 0.3
33 – 36	1.67 ± 0.3	1.92 ± 0.3	1.81 ± 0.2
37 – 40	2.32 ± 0.3	2.14 ± 0.5	2.27 ± 0.3
41 – 44	2.15 ± 0.5	2.13 ± 1.0	2.15 ± 0.4
45 – 48	2.54 ± 0.5	2.50 ± 0.7	2.53 ± 0.4
49 – 52	2.29 ± 0.6	-	2.29 ± 0.6
Above 52	2.32 ± 0.6	3.0 ±1.7	2.41 ± 0.5

A wide individual variation was noted in the power of lens required giving a range of +0.75 to 3.0 D spheres. As expected, myopes were found to require less power than average for any particular age group while hypermetropes required more.

DISCUSSION

Presbyopia is as universal as ageing. The variations observed between this group of Nigerians studied and Caucasians[1, 2] could be explained by racial differences. Unfortunately the numbers involved in this study are quite small hence little statistical inference can be made.

These limitations not withstanding, the study confirms certain standard believes and suggests areas of possible differences. The standard believes confirmed are that variations in required lens power are so wide that prescriptions should not be made based on empirical age matching[1, 2]. Each patient should be taken as an individual and his personal requirement determined before an order is made. Practitioners should not make empirical prescriptions depending only on patients' age for this will often lead to under-prescription or over-prescription.

This study tends to suggest that the mean age of onset in Nigerians is about 39 years while it is 40 to 45 years in the white races[1, 2, and 3]. A larger series need to be analyzed before this finding is confirmed.

For the first time probably, however, we are noting that females apparently present symptoms of presbyopia earlier than males. The explanation for this could rest in the fact that females have smaller muscle masses and strength than males. Presbyopia is possibly overcome, as in hypermetropia, by ciliary muscle effort. Failure of this effort would thus manifest first in persons weakened by any predisposing factors such as overwork, illness and gender. Early onset of presbyopia is associated with all these.

The study also confirms what has been thought that Nigerians require more powerful lenses for the amelioration of symptoms of presbyopia than whites of equivalent age[1, 2, and 3]. Whereas a white patient of 40 years of age presenting with presbyopia may require on average a lens of about 0.75 to 1.0D[1,3], a Nigerian of similar age requires a lens of about 2.27 ± 0.3D as per this study results. This difference is striking and needs to be confirmed by study of a larger series. If confirmed, it goes to further confirm the need to establish our own local standards for this and other physiological variables.

CONCLUSION

Nigerian presbyopes at first presentation are on average younger and require more lens power than their Caucasian counterparts.

Age at first presentation of presbyopia varies widely from individual to individual and so also does the power of lens required for its amelioration.

Presbyopic correction should be individualized rather than be based solely on an assumed standard for age of patient.

ACKNOWLEDGEMENT

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