Study of Prevalence of age related macular degeneration in Andhra Pradesh Population – Retrospectively

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Abstract

Background: Age related macular degeneration (AMD) have been reported globally especially in developing countries. Their occupation, nutritional status habits also play vital role in AMD.

Method: out 80 patients 60 were 48 to 55 and 20 were 56 to 75 years. And classified as early AMD and late AMD, respectively patient's ophthalmic evaluation and visual Retinopathy chart study, a zeiss SL 130, slit lamp, Goldmann applanation tonometre. Binocular indirect Ophthalmoscope, ETDRS chart. Apart for this fasting Blood glucose, Total serum cholesterol, HDL, LDL S. Triglyceride, Hb% CBC was also carried out.

Results: 66 (82.5%) patients and no visual impairment (VI) 7 (8.7%) had mild VI, 3 (3.7%) had severe VI, 4 (5%) had legal Blindness. In the comparison of early (60) and late (20) AMD patients – 50 early (62.5%) had no VI, 16 (20%) late AMD had no VI, 5 (6.25%) in early AMD 2 (2.5%) in late AMD had mild VI, 2 (2.5%) in early AMD, (1.4%) late AMD and 1 (1.25%) had legal Blindness. Clinical manifestation were compared between NO VI 66 (82.5%) and 14 (17.5%) VI. Blood pressure systolic, Diastolic S. Cholesterol, S. triglyceride S. HL were insignificant (NS) and only BMI in No VI was 22.2 (SD±2.4) and VI had 20.5 (SD±4.1) t test was 2.55 and p<0.01. Intraocular pressure 13.5 (SD±2.4) in No VI, 13.1 (SD±2.2) in VI, t test was 1.09 p<0.02, Diabetic retinopathy was 11 (13.7%) in No

VI 2 (2.4%) in VI, Ermmetropia was 9 (15%) in no VI, 2 (2.4%). Myopia was 34 (42.5%) in no VI, 6 (7.5%) in VI. Hyperopic was 17 (21.2%) in No VI, 4 (5%) in VI patients.

Conclusion: This study helps the ophthalmic surgeon to predict the severity of AMD and treat the patients efficiently to prevent Blindness.

Keyword: VI = visual impairment, NOVI = No Visual impairment, AMD= Age related Macular disease, visual acuity, Ophthalmic evaluation.

Introduction

Age related macular degeneration accounts for 8.7% of all blindness worldwide and the most common cause of blindness globally [1]. Its prevalence is likely to increase as consequence of exponential population ageing. There have been significant advances in the management of exudative or so-called wet age-related macular degeneration with the introduction of anti-angiogenesis therapy and patients now have effective treatment options that can prevent blindness and in many cases restore vision [2][3] but these are very expensive and not available in many under developed countries [4]. Hence understanding prevalence, burden and population impact is essential for adequate health care planning and provision which require evaluating the aetiology and various parameters of patho-physiology, bio-chemical, ocular study includes multiple factors which leads to macular degenerates which results into blindness along with advancement of age.

Material and Method

80 patients a aged between 48 to 75 years regularly visiting to Ophthalmology department of katari Medical College Chinakondrupodu Guntur-522002 Andhra Pradesh, were studied.

Inclusive Criteria: Age related macular degeneration (ARMD) due to history or clinical examination were selected for study.

Exclusion Criteria: Dry ARMD which includes geographic atrophy chorio-retinal atrophy secondary to high myopia and chronic genulomatous eye disease were excluded from the study.

Method: 60 patients were aged between 48 to 55 and 20 were aged between 56 to 75. Hence 48 to 55 were classified as (early are macular Degenerate) early AMD and 65 to 75 as late AMD.

Detailed history including socio-economic and ocular history their habits smoking tobacco, chewing tobacco, alcohol consumption, occupation was recorded from each patient.

Known diabetes drugs therapy and newly diagnosed D M patients were also recorded. Biochemical examination included Fasting blood glucose by enzymatic assay. Total serum cholesterol HDL, LDL, serum triglyceride Haemoglobin, CBC was studied. Ophthalmic evaluation included visual acuity and refraction using.

Retinopathy study chart (Low vision products; light house (New York USA) anterior segment examination using a zeiss SL 130, slit lamp. Intraocular pressure, measurement using Goldmann applanation tonometre and fundus examination using binocular indirect ophthalmoscope. Grading of lens opacities was performed using the lens opacities classification system. The grading agreement was as follows: Nuclear opalescence (K=0.84), Nuclear colour (K=0.88), cortical (K=0.89) and posterior sub capsular (K=0.89). Over all the average grading agreement was high (K=0.85).

Visual acuity Assessment – was done by using ETDRS chart for those who could not read English alphabets. Landolt's ring test was used. Objective refraction was always followed by subjective refraction; visual impairment was defined as per WHO criteria [5]. Retinal photographs were obtained after papillary dilatation (FF 450 fundus camera carlzeiss) Diabetic Retinopathy (DR) was graded using the international clinical diabetic Retinopathy disease severity scale. The grading agreement was 0.80 AMD was graded according to International AMD Epidemiological study group [6].

The duration of study was two years (April 2017 to June 2019)

Statistical analysis: findings and results of early group of AMD was compared with late AMD by using t test and classified with percentage. The statistical data was performed in SPSS software. Ratio of the male and female was 2:1

Observation and Results

Table-1: Study of visual acuity status 66 (82.5%) patients had no visual impairment (VI), 7 (8.75%) had mild VI, 3 (3.75%) had severe VI, 4 (5%) had legal blindness.

Table-2: Comparison of visual impairment in both early and AMD patients 50 (62.5%) of early AMD, 16 (20%) in late AMD had no VI, 2 (2.5%) in late AMD had mild VI,

2 (2.5%) of early AMD, 1 (1.25%) had late AMD had severe VI.

3 (3.7%) in early AMD, 1 (1.25%) of late AMD had legal Blindness.

Table-3: Study of clinical manifestation between Visual impairment and no visual impairment patients 66 (82.5%) had no VI and 14 (17.5%) had visual impairment.

In systolic BP (mmHg) 12.8 (SD±15.2) in no VI and 124.2 (SD±17.2) t test 0.623 and 0.5 NS (not significant).

In diastolic RP (mmHg) 77.5 (SD±5.2) in no VI and 77.2 (SD±8.1) t test 0.279 and p value is NS

BMI 22.2 (SD±4.3) in no VI 20.5 (SD±4.1) t test 2.55 p value was highly significant p<0.01 serum cholesterol – 164.5 (SD±34.4) in no VI and 162.2 (SD±30.3) in VI t test 0.44 and p value was NS (0.6).

Serum triglyceride in no VI 104.2 (SD±48.2) in no VI, 102.1 (SD±37.3) and t test was 0.308 and p value was NS (0.6) serum HDL 40.8 (SD±9.4) in no VI, 40.4 (SD±7.2) in VI t test 0.302 p value was NS (0.7)

Table-4: Study of ocular factors intraocular pressure – 13.5 (SD±2.4) in no VI and 13.1 (SD±2.2) in VI t test was 1.09 p<0.02 highly significant.

Diabetic retinopathy was observed in 11 (13.7%) in no VI, 2 (2.4%) in VI.

Emmetropia was 9 (15%) in no VI 2 (2.4%) in VI.

Myopia 34 (42.5%) in no VI, 6 (7.5%) in VI

Hyperopia 17 (21.2%) in no VI, 4 (5%) in VI patients

Discussion

In the present study if prevalence of AMD in Andhra Pradesh Population, study of status of visual acuity – 66 (82.5%) had no VI, 7 (8.7%) had mild M VI 3 (3.7%) had severe VI, 4 (5%) had legal Blindness (Table-1). In the comparison of visual impairment in both early and late AMD patients, 50 (62.5%) in early AMD, 16 (20%) in late AMD had no VI, 5 (6.25%) in early and 2 (2.5%) late AMD has mild VI, 2 (2.5%) in early and 1 (1.25%) in late AMD has severe VI, 3 (3.7%) in early AMD 1 (1.25%) in late AMD has legal Blindness

(Table-2). In the clinical manifestations, BMI study – 22.2 (SD±4.3) in VI and 20.5 (SD±4.1) t test 2.55 and p value was highly significant (p<0.01) and Blood pressure (both systolic and diastolic mm/Hg), serum total cholesterol, serum triglyceride, S. HDL were insignificant (NS) (Table-3). In the study of ocular factors – 13.5 (SD±2.4) i no VI and 13.1 (SD±2.2) in VI t test 1.09 and p<0.02 (significant), intraocular pressure 11 (13.7%) in no VI, 2 (2.4%) diabetic Retinopathy, 9 (15%) in no VI, 2 (2.4%) in VI Emmetropia, 34 (42.5%) in no VI, 6 (7.5%) in VI myopia, 17 (21.2%) in no VI, 4 (5%0 in VI hyperopic was observed (Table-4).These findings are more or less in agreement with previous studies [7][8][9].

It is also hypothesized high percentage of cataract precluding assessment of significant number of fundus images in order patients may have resulted in an underestimate of the prevalence of more severe drusen types that normally increases with increasing age [10]. It is reported that AMD is due to vetello retinal disorder [11] and in more advanced age AMD becomes dry and irreparable due to neuro-vascular inefficiency [12]. Moreover Dry AMD includes geographic atrophy. The eyes with chorio-retinal atrophy secondary to the obvious causes like myopia and chronic grenulomatous eye disease hence such patients have been excluded from present study because such Dry AMD is irreversible and incurable.

The AMD who had severe visual impairment, experience difficulties in performing visual task in daily living and could be benefitted by low vision care.

Summary and Conclusion

The present study of AMD in Andhra Pradesh Population 48 to 75 years of age is the specific age of prevalence of AMD but early AMD signs were less common.

Hence this study warrants investigating whether certain genetic factors (specific phenotype or subtypes) such as polypoidal, choroidal vasculopathy are more common in AMD, moreover nutritional, patho-physiological, neuro-vascular study is also required because exact pathogenesis of AMD is still unclear.

Table – 1

Study of status of visual acuity

Sl No	Visual acuity	No. of patient (80)	Percentage (%)
1	No Visual impairment (VI)	66	82.5
2	Mild visual impairment	7	8.75
3	Severe visual impartment	3	3.75
4	Legal Blindness	4	5

Table – 1
Study of status of visual acuity
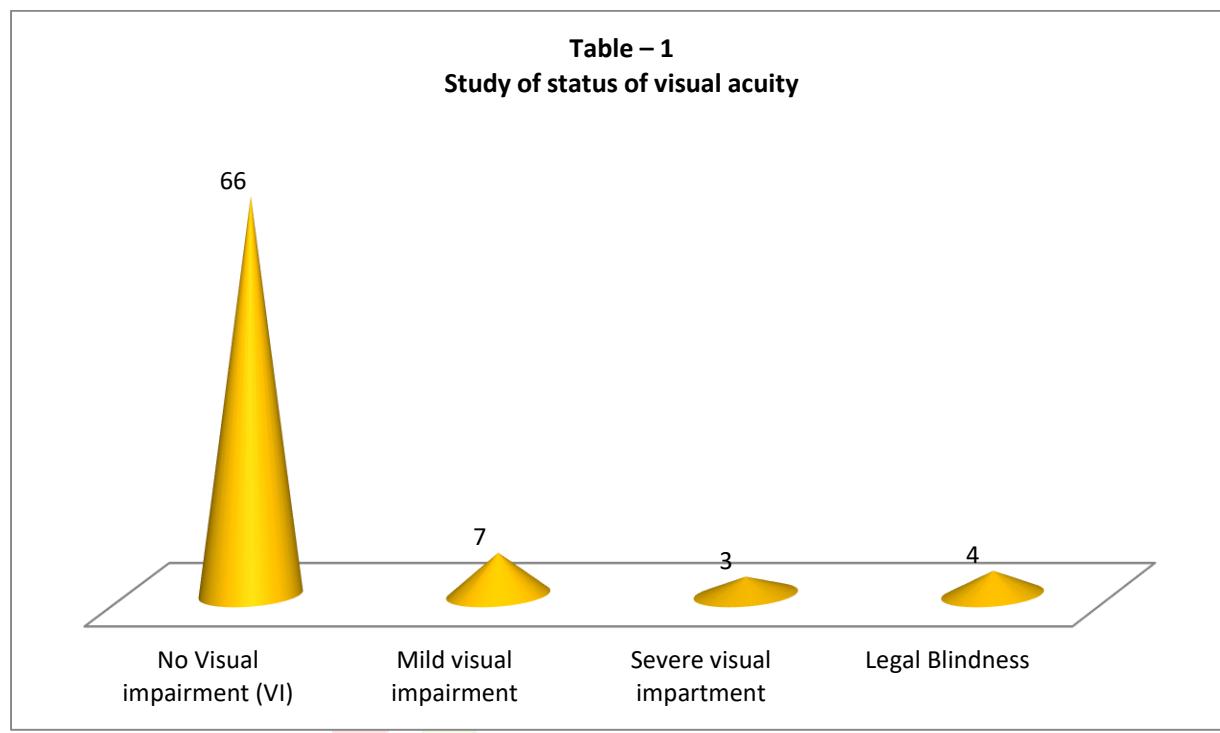
Table – 2

Comparison of visual impairment in both early and late AMD patients

Sl No	Particulars	Early AMD 60	Percentage (%)	Late AMD 20	Percentage (%)
1	No VI	50	62.5	16	20
2	Mild VI	5	6.25	2	2.5
3	Severe VI	2	2.5	1	1.25
4	Legal Blindness	3	3.7	1	1.25
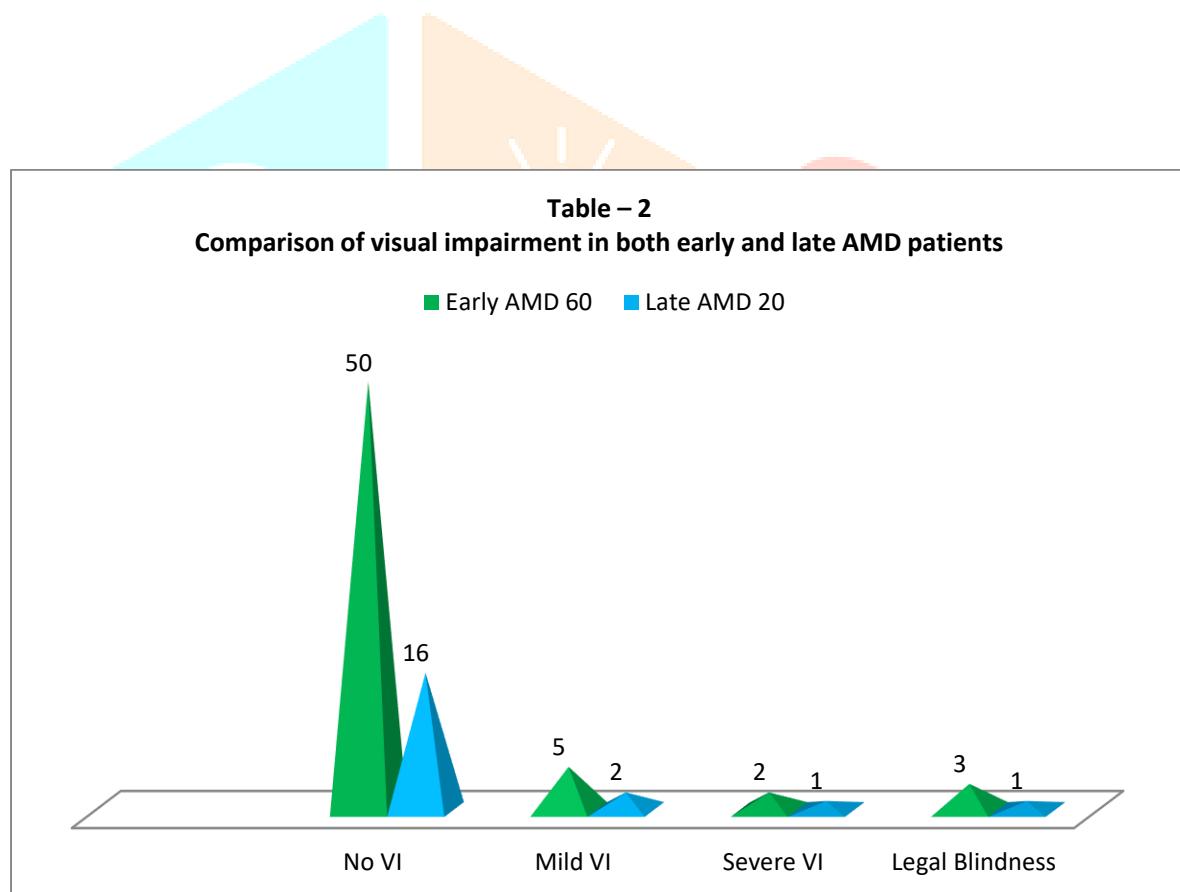
Table – 2
Comparison of visual impairment in both early and late AMD patients

Table – 3

Clinical manifestation of between No Visual impairment and visual impairment patients

Sl No	Clinical Manifestation	No VI 66	VI 14	t test	P Value
1	Systolic BP (mm Hg)	125.8 (SD±15.2)	124.2 (SD±17.2)	0.623	0.5 NS
2	Diastolic BP (mm Hg)	77.5 (SD±5.2)	77.2 (SD±8.1)	0.279	0.7 NS
3	BMI Body mass Index	22.2 (SD±4.3)	20.5 (SD±4.1)	2.55	0.01 p<0.01
4	Serum Total Cholesterol	164.5 (SD±34.4)	162.2 (SD±30.3)	0.44	0.6 NS
5	Serum triglyceride	104.2 (SD±48.4	102.1 (SD±37.3)	0.308	0.6 NS
6	Serum HDL	40.8 (SD±9.4)	40.4 (SD±7.2)	0.302	0.7 NS

NS = Not Significant

Table – 3
Clinical manifestation of between No Visual impairment and visual impairment patients
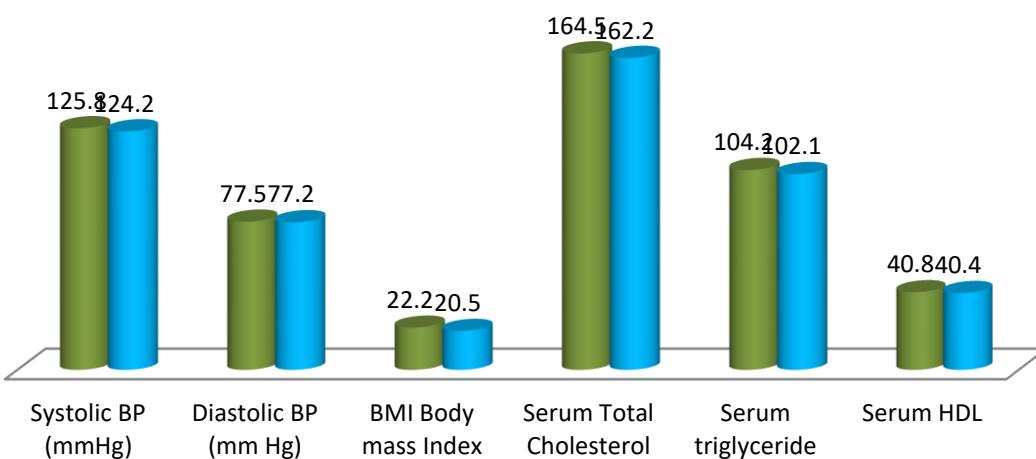
Table – 4

Study of ocular factors

Sl No	Ocular factors	No VI (66)	VI (14)	P value
1	Intra ocular pressure	13.5 (SD±2.4)	13.1 (SD±2.2)	0.02
2	Diabetic Retinopathy	11 (13.7%)	2 (2.4%)	--
3	Emmetropia	9 (15%)	2 (2.41%)	--
4	Myopia	34 (42.5%)	6 (7.5%)	--
5	Hyperopic	17 (21.2%)	4 (5%)	--

Table – 4
Study of ocular factors
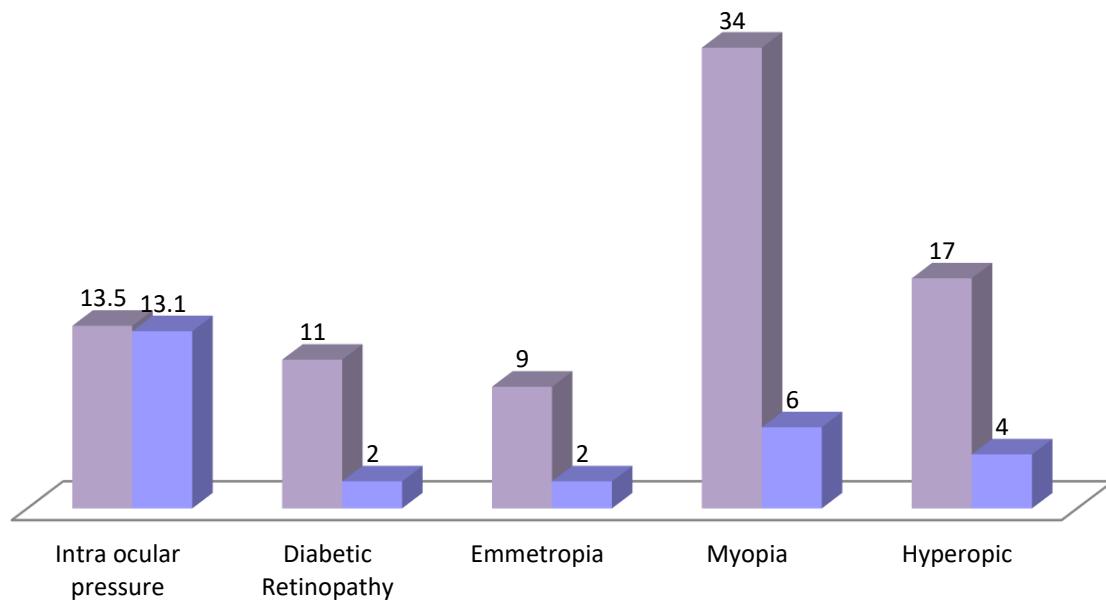
Reference

1. R. Klein, BE Klein – The prevalence of age related maculopathy by geographic region and ethnicity. Prog. Retin Eye Res. 1999, (18), 371-89.

2. L. S. Lim, P Mitchell – Age related macular degeneration. Lancet – 2012 (379) 1728-38.

3. N M Bresslur – Age related macular degeneration is the leading cause of blindness. JAMA 2004, (291) 1900-1.

4. DF Martin, MG Magaine – Renibizumab and behavacizumb for neuro-vascular age related macular degeneration N. Engl. J. Med. 2011, (364), 1897-99.

5. World Health organisation – International statistical classification of disease related and related health problems 10th revision current version for 2003, chapter VII H54 Blindness and low vision available http://www.who.int/classification/icd/en. Accessed on 22nd November 2020.

6. The international ARM Epidemiological study Group. An intonation classification and grading system for age related maculopathy and age related macular degeneration. Surv. Opthalm. 1995, 39, 367.

7. Bialek-524 manska A – Risk factors evaluation in age related macular degeneration Klinoczna 2007, 109, 127-30.

8. Woo JH, Sanjay S – The epidemiology of age related macular degeneration in the Indian sub-continent Acta opthalm. 2009, 87, 262-264.

9. Krishnaiah S, Das TP – Associated factors for age related maculopathy in the adult population in south India, Br. J. Opthalmol. 2009, 93, 1146-50.

10. Augood CA, Vingerling JR – Prevalence of age related maculopathy in older Europeans Arch. Othalmol. 2006, 124, 529-535.

11. Nirmalan PK, Katz J – Prerelance of vitreo-retional disorders in rural population of southern India Archi. Opthalmol. 2004, 122, 581-586.

12. Sanjeev K. Gupta, Gudlavalleti VS – Prevalence of early and late Age related Macular Degeneration in rural population of Northern India, Investigative Ophthalmology and visual science, March 2007, vol. 4 (3), 1007-1011.