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Research Article

**EFFICACY OF ANTIOXIDANT IN PATIENTS OF SENILE
CATARACT**¹Dr. Ali Akram, ² Dr. Maham Jamil, ³ Dr. Zunaira Ijaz¹Sharif Medical and Dental College Lahore, Pakistan²University Medical and Dental College Faisalabad, Pakistan³University Medical and Dental College Faisalabad, Pakistan**Abstract:**

Objective: - Our research study aims on the finding of relation between antioxidant vitamins "A", "C" & "E" nutritional intake; Posterior Sub Capsular Cataracts; Nuclear and Cortical among a group of individuals (both men and women).

Design: - A retrospective case-control study having cross-sectional survey bases.

Subjects: - Forty patients; consisting on both men and women; age range from (40 – 79) years, with senile cataract and twenty-six cases having no signs of cataract, of the similar ranged ages; were preferred in the patients visited to the Ophthalmic Clinic.

Setting: - For grading "Nuclear, Cortical and Posterior Sub Capsular Lens Opacities (PSCLO)"; the LOCS – III "(Lens-Opacities Classification System (LOCS))" was brought into practice. To review plasma absorption of Vitamin "C"; fasting blood samples were taken. We integrated food frequency questionnaires for identification of food habits of our subjects.

Results: - In cataract patients; plasma level of Vit-C (0.9 ± 0.6 mg/dl) were notably (P-value under 0.002) less than as compared to controlled group (1.4 ± 0.5 mg/dl). Nutritional Vit-A intake (P-value under 0.04); Vit-C" (P-value under 0.001) and Vit-E (P-value under 0.001); in the Cataract cases; observed lower when compared with controlled group. Data shows noteworthy association involving "Nuclear" (P-value under 0.006), PSCO (P-value under 0.01) and "Antioxidant" dietary intake, Vit-A, Vit-C and Vit-E were found within this mature patient's group (Cataract cases).

Conclusion: - As per the findings of our study it is suggested that an antioxidant rich diet (i.e. vitamin A, C and E) may possibly carry repercussions of senile cataract formation for delay or prevention from it.

Keywords: - Dietary antioxidants vitamin A, C and E; Lens-Opacities Classification System (LOCS); Ophthalmic Clinic; Posterior Sub Capsular Opacities (PSCO); Senile cataract.

Corresponding author:**Dr. Ali Akram,**

Sharif Medical and Dental College,

Lahore,

Pakistan

QR code



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INTRODUCTION:

In the etiology of senile cataract, we commonly believe that oxidative trauma plays key role. For last ten years this possibility remained under consideration that antioxidant filled dietary vitamins; Vit-E and Vit-C are effective at hunting and eliminating pro-oxidants and free radicals; possible potent for the diminishing of the cataract threat by protection of the lens proteins by the variation of the oxidative level. Enhancement of Vit-C or Vit-E trial on animal models have demonstrated that [1]; these can limit the damages of lens following oxidative insult and some evidences are provided by observational studies; that with more intake of such vitamins we may be able to protect individuals. LOCS-iii (Lens Opacities Classification System-iii) was exercised for assessment of PSCLO, Nuclear and Cortical; in a mature group of both the genders [2]. This study focused to examine the bond stuck between food status (nutritional intake of Vit-A, Vit-C and Vit-E); and presence of Senile Cataract in the research participants.

SAMPLE AND TECHNIQUES

The sample of our study comprised on 40 Cases of cataract; referred to ophthalmic clinic and sample of 26 individuals without cataract having same age (± 2). They all underwent a test according to the LOCS-III (6); conducted by Ophthalmologist who inquired for the past occurrence; a quantitative PSCLO appraisal was prepared, cortical and nuclear on incision light. We defined the nuclear cataract occurrence by (≥ 3) grade; cortical cataract (CC) by (≥ 2) grade; respectively at scale of nuclear opalescence [3]; on the scale of the cortical opalescence; and PSC by (≥ 0.5) grade; on the scale of PSC (Posterior Sub Capsular).

Samples of 05 ml venous blood, with fasting, used at the clinic; deliberation of vitamin "C" via (02, 04) dinitro-phenyl hydrazine that is used with the combination of spectrophotometer or UV at (520nm) used for measurement of plasma. Food regularity questionnaires analyzed with Nutrition-3 software to determine Vitamin A, C, and E in the diet.

For the statistical analysis of data in contemporary study, we operated the SPSS. Analysis of variance, chi-square and student "t-test" have also been used in statistical data analysis.

RESULTS:

According to the results of this study, age bracket of sample population and pointing device at its baseline was in the range of (40 years – 79 years with a mean age as 64 years). In the sample of 40; males were (47.5%) and females were (52.5%) included in this research; and in the total of 26 (Control group) the proportion of male to female was respectively (38.5%) and (61.5%); which were taken as sample from the patients referred to the ophthalmic clinic.

Among control group when compared with case group, significant higher BMI was reported with statistical significant P-value of (<0.04), where Controls were higher in the educational level (84.6%) educated and (15.4%) were non-educated; when judged in the comparison of the Cases (47.5%) were illiterate and (52.5%) were literate.

In patients with cataract; the plasma concentration mean of vitamin C was notably ($p < 0.002$) lower as compared to managed group (Table-1). In patients with cataract; the mean dietary vitamin A, C and E intakes were notably lower when compared with control groups (Table-1). During the time span of our study, none of the sample individuals were taking any supplement.

Table – I: Characteristic of the study participants

Features	Case Mean \pm SD	Controls Mean \pm SD	P-value
Age (yrs)	64.4 \pm 8.4	63.6 \pm 6.3	NS
Weight (kg)	64.1 \pm 11.4	68.6 \pm 12.4	
Height (cm)	160.6 \pm 9.6	160 \pm 7.7	
BMI (kg/ m ²)	24.8 \pm 3.4	26.8 \pm 4.3	P<0.04
Education ILL. (%)	47.5 (19)	15.4 (4)	
Lit. (%)	52.5 (21)	84.6 (22)	
Plasma vitamin C (mg/ dl)	0.9 \pm 0.6	1.4 \pm 0.5	P<0.002
Dietary vitamin Vit-C (mg/ day)	100.8 \pm 75.7	205 \pm 174.3	P<0.001
Vit-E (mg/ day)	1.4 \pm 1.1	2.9 \pm 1.3	P<0.001
Vit-A (IU/ day)	6993.1 \pm 630.7	14751.6 \pm 2217.9	P<0.04

As per (Table-2), a degree of three types of cataract was observed in all patients, for example 25 cases of the participants (62.5%) were affected by a nuclear cataract degree-III; 5 individuals (12.5%) bear a cortical cataract Degree-3; and seventeen cases of our sample (42.5%) were affected by a posterior sub capsular cataract Degree-3 (Table-2).

Table – II: Distribution of lens opacity by location

Type/Degree	Nuclear		Cortical		Posterior Subcapsular	
	Number	Percent	Number	Percent	Number	Percent
0 - Trace	4	10	11	27.5	10	25
I	4	10	8	20	4	10
II	7	17.5	13	32.5	9	22.5
III	25	62.5	5	12.5	17	42.5
IV	-	-	3	7.5	-	-
Total	40	100	40	100	40	100

The outcome indicated that low intake of vitamin “C”: statistically and significantly affect the nuclear cataract with a significant P-value (<0.006); and PSC cataract with a significant P-value as (<0.01) (Table – III). Reduced Vit-E intake had a significant and statistical effect on nuclear cataract with a significant P-value as (<0.001) and PSC cataract (P-value < 0.01); but reduced Vit-A intake significantly effects the nuclear cataract (P-value < 0.038) (Table – III) Vit-C concentrations.

Table – III: Correlation coefficient for nuclear, cortical and posterior subcapsular and dietary intake of vitamin C, E and A

Type of cataract Dietary Vitamin Intake	Nuclear		Cortical		Posterior Subcapsular	
	C.C	P-Value	C.C	P-Value	C.C	P-Value
Vit - C (mg/day)	-0.427	0.006	0.011	0.948	0.403	0.01
Vit - E (mg/day)	-0.524	0.001	-0.17	0.294	-0.396	0.01
Vit - A (IU/day)	-0.329	0.038	0.131	0.422	-0.275	0.286

Outcomes of our research; can be compared with other case-control research studies, investigational studies carried out on various animals and three other studies of cross-sectional nature; which suggest higher threat of cataract in the individuals diagnosed with the low level of serum absorption of 2 antioxidants or more than 2 antioxidants. These results are comparable with the previous case-control studies and some previous cross-sectional studies, our study report an increase in hazards of cataract among cases with low additional ingestion of vitamin “E¹⁰”. During a regularity examination in Australia; toll of posterior sub capsular cataract and nuclear, observed higher in the individuals bearing low vitamin “E¹¹” ingestion. More consumption of vegetables and fruits in daily dietary intake may prevent or delay senile cataract among elderly people; as these carry rich antioxidants i.e. vitamin A, C and E.

DISCUSSION:

The development mechanism of cataracts, related to age is tranquil and dubious; but lens protein damage by oxidative is alleged to participate mainly in this

process [4], Lens declines the opposition with age, whereas intrinsic defense system carries this responsibility [5]. Vitamins β-carotene, C and E perform the role of antioxidants; which thus may modify the age-related development of cataracts and antioxidant defense system [6]. There was a statistical significant link between nuclear & posterior sub-capsular opacities, in this particular mature participant’s group, carrying little nutritional ingestion of vitamin “A”, “C” and “E” [7]. Nuclear cataract effect on the individuals having low intake of vitamin A is significant (p<0.038). Individuals having low plasma carry increased risk of nuclear cataract [8].

CONCLUSIONS:

In the etiology of senile cataract, in common, oxidative stresses is considered to play very vital and significant role. The research outcomes recommend a food carrying affluent antioxidants like vitamin A, C and E may have repercussions of prevention or delay from senile cataract formation. More consumption of vegetables and fruits in daily dietary intake may

prevent or delay senile cataract among elderly people; as these are rich in antioxidant Vit-A, Vit-C and Vit-E.

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