



Original Research Article

Assessment of relation between periodontal disease and macular degeneration- A clinical study

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ABSTRACT

Background: Periodontal diseases are leading cause of tooth loss. The assessment of correlation between periodontal disease and macular degeneration was performed.

Materials and Methods: We enrolled 178 patients who underwent ophthalmologic examinations and oral examination with community periodontal index (CPI) probe. AMD was diagnosed based on criteria such as presence of soft indistinct drusen or reticular drusen and presence of hard or soft distinct drusen with pigmentary abnormalities in the absence of late AMD.

Results: There were 102 males and 76 females. 61.3% (108) patients had periodontal diseases and 8.4% (15) had AMD. Among AMD patients, habit of smoking (10), hypertensive (8), anemia (12) and cardiovascular disease (5) was evident. Serum HDL level was 54.2 mg/dl, serum ferritin level was 104.6 ng/ml and BMI was 28.4 Kg/m². AMD patients had severe periodontal diseases in 7, moderate in 3 and 2 in mild, non AMD had 1 moderate and 2 in severe periodontal diseases. The difference between AMD and non AMD was significant (P< 0.05).

Conclusion: AMD patients had severe periodontal diseases as compared to non AMD patients.

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1. Introduction

Periodontal diseases (PDs) are main leading reason for destruction of tooth-supporting tissues due to unsuitable response against pathogenic bacterial species by host. It has been shown that common risk factors are genetic and environmental.¹ PDs are characterized by the presence of gingival bleeding, gingival inflammation, gingival recessions, dental mobility, and loss of clinical attachment leading to presence of periodontal pockets and alveolar bone resorption.²

Age-related macular degeneration (ARMD) is severely visually disabling disease affecting millions of people

worldwide. It is highly prevalent disease. The disorder affects the macula and therefore central vision, thus leading to significant disability and endless personal impact not only to the patient, but also the family. There are two major forms of the disease: atrophic or 'dry' macular degeneration and exudative or 'wet' ARMD.³ The occurrence of proliferation of abnormal new blood vessels, or formation of a choroidal neovascular membrane are key features. Atrophic form is evident in most of patients of ARMD. It is commonly evident with drusen and retinal pigment epithelial (RPE) atrophic changes of the central macula. It is seen that severe central visual loss is observed in patients older than 60 years of age with exudative form of ARMD.⁴ It is found to involve 15-20 million Americans with prevalence in 65-74 years of

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18%. However, this prevalence varies country to country with lower prevalence in the Asians and Africans. About 8 million USA citizen have bilateral intermediate or unilateral advanced disease. Advanced disease is seen in about 1.75 million Americans.⁵ The present study was conducted to assess relation between periodontal disease and macular degeneration.

2. Materials and Methods

We recruited 178 patients in the department of Periodontics. The included patients were informed regarding the study and consent was taken beforehand. Approval from ethical clearance committee was also obtained.

Demographic data was recorded. Eye examination was done by ophthalmologist. We obtained nonmydriatic 45° color fundus photographs. Community periodontal index (CPI) probe was used for oral examination. AMD was diagnosed based on criteria such as presence of soft indistinct drusen or reticular drusen and presence of hard or soft distinct drusen with pigmentary abnormalities in the absence of late AMD. Size, appearance and edge sharpness helped in classification of Drusen. Retinal pigmentary abnormalities were graded as hyper- or hypopigmentation of the retinal pigment epithelium (RPE). Statistical analysis with p value < 0.05 was recorded.

Table 1: Patients distribution

Total- 178		
Gender	Males	Females
Number	102	76

Table 1 shows that out of 178 patients, males were 102 and females were 76.

Table 2: Prevalence of periodontal diseases and AMD

Disease	Number	Percentage
Periodontal disease	108	61.3
AMD	15	8.4

Table 2 shows that 108 patients had periodontal diseases (61.3%) and 15 (8.4%) had AMD.

It shows that among AMD patients, 10 had habit of smoking, 8 were hypertensive, 12 had anemia and 5 had cardiovascular disease. Serum HDL level was 54.2 mg/dl, serum ferritin level was 104.6 ng/ml and BMI was 28.4 Kg/m². AMD patients had severe periodontal diseases in 7, moderate in 3 and 2 in mild, non AMD had 1 moderate and 2 in severe periodontal diseases. The difference between AMD and non AMD was significant (P < 0.05).

3. Discussion

ARMD is found to have diverse and complex etiology based on the stage of disease. It is found that the atrophic

Table 3: Comparison of parameters in patients with and without AMD

Parameters	AMD	Without AMD	P value
Smoking	10	5	0.01
Hypertension	8	7	0.92
Anemia	12	3	0.001
Cardiovascular disease	5	10	0.01
Serum HDL	54.2	48.1	0.05
Serum ferritin	104.6	92.4	0.02
BMI	28.4	24.2	0.05
Periodontal diseases Mild	2	0	0.01
Moderate	3	1	
Severe	7	2	

form of the disease is characterized by macular RPE alterations, the accumulation of lipofuscin and drusen, retinal pigment epithelial atrophy and degeneration of segments of the choriocapillaris.⁶ The earliest sign of the development of ARMD is the presence of macular drusen, or lipid-rich material with various amounts of collagen fibrils that accumulate at the level of the sub-RPE and Bruch's membrane. There are different risk factors such as light skin pigmentation, family history, advancing age, hyperopia, smoking, female gender, hypertension, hypercholesterolemia, and cardiovascular disease.⁷ The present study was conducted to assess relation between periodontal disease and macular degeneration.

In present study, out of 178 patients, males were 102 and females were 76. We found that 108 patients had periodontal diseases (61.3%) and 15 (8.4%) had AMD. Yong and others⁸ in their study on 13,000 adults over 40 years old found that PD was seen in 37.4% and the AMD was found in 5.6%. Results showed no correlation of AMD with mild Perio, but there was an association between those with severe Perio and AMD and mostly in those that were in the younger group. It was stated in the study that participants with severe PD in the middle age group were 1.61 times more likely to have AMD.

We found that among AMD patients, 10 had habit of smoking, 8 were hypertensive, 12 had anemia and 5 had cardiovascular disease. Serum HDL level was 54.2 mg/dl, serum ferritin level was 104.6 ng/ml and BMI was 28.4 Kg/m². AMD patients had severe periodontal diseases in 7, moderate in 3 and 2 in mild, non AMD had 1 moderate and 2 in severe periodontal diseases. Wagley et al⁹ include approximately 5887 subjects aged 40 years and found that controlled for AMD confounders and risk factors and was stratified by age, the authors observed that PD was independently associated with AMD only in the youngest group.

Brzozowska and Puchalska-Niedbal¹⁰ their study on 56 patients with AMD between ages 45-90 years found dental

and periodontal checkups lesions in their oral cavities, which were mainly located in the periodontal tissues. Karesvuo et al¹¹ evaluated the relationship between AMD and oral status in 1751 subjects aged 30 years and older. 3.1% (54) prevalence of AMD was seen. The authors reported that persons with AMD had fewer teeth and more alveolar bone loss compared with participants who did not have AMD. Also, they observed a significant association between alveolar bone loss and AMD in men.

Shin et al.¹² found that the prevalence of PD of 37.4% and AMD of 5.6%. There was no significant difference in the proportion of participants with PD between those with and without AMD. It was seen that subjects with AMD in the middle age group had more any PD than those without AMD thus PD was not significantly associated with AMD. However, subjects with severe PD in the middle age group were 1.61 times more likely to have AMD.

The shortcoming of the study is small sample size. Large sample size and long follow up could lead to better results.

4. Conclusion

Authors found that AMD patients had severe periodontal diseases as compared to non AMD patients.

5. Source of Funding

None.

6. Conflict of Interest

None.

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