Assessment of Correlation between Obesity and Periodontitis

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ABSTRACT

Introduction: The relationship between obesity and periodontitis is the recent fields of investigation in periodontal department and the underlying biological pathophysiology remain unclear. Therefore, the aim of the present study was to establish the correlation between obesity and periodontitis.

Material and methods: The present investigation included assessment of correlation between obesity and periodontitis. A total of 100 patients were included in the present study among which, 50 were obese and the remaining were non-obese and were of normal weight. Various following periodontal parameter were calculated were gingival index, Plaque index, Pocket probing depth (PP), clinical attachment loss (CAL).[10] Assessment of all the results was done by SPSS software.

Results: Mean plaque index of the subjects of the obese group and the non-obese group was 25.85 and 35.11 respectively. Mean gingival index of the subjects of the obese group and non- obese group were 29.82 and 30.17 respectively. Significant results were obtained while comparing the plaque index in between subjects of the obese group and non-obese group. Significant results were obtained while comparing the CAL and probing pocket depth in between the subjects of the obese group and non-obese group respectively.

Conclusion: Obese patients are associated with more sever level periodontitis in comparison to the normal weighed subjects.

Keywords: Chronic, Obesity, Periodontitis

INTRODUCTION

The definition of on the basis of body mass index (BMI), is the proportion of body weight to height of the subject squared. Body mass index is associated with mass of fat and its associated morbidity and mortality and so it also sufficiently shows the obesity-associated risk of disease in almost whole of populations; however, it is also associated with few limitations.[1-3] Periodontitis is defined as the processes that leads to destruction of the associated and adjacent tooth structures that provide support to the teeth. Periodontal tissues are made of the gingiva, the periodontal fibers, cementum, and alveolar bone. The long-term obliteration of these adjacent tissues can lead to the subsequent loss of teeth. Epidemiological studies have shown that more than half of the world's subject's suffer from one or the other form of chronic periodontal disease.[4-6] The relationship between obesity and periodontitis is the recent fields of investigation in periodontal department and the underlying biological pathophysiology remain unclear. However, it has been studied that the fat tissue causes the release of proinflammatory mediators like cytokines and hormones referred to as adipocytokines, which induce inflammatory process thus leading to a similar pathophysiology between the both the conditions.[7-9] Therefore, the aim of the present study was to establish the correlation between obesity and periodontitis.

MATERIAL AND METHODS

The present study sought to evaluate the correlation of obesity and periodontitis clinically. A total of 100 patients were selected visiting the Dept of Periodontology of Vananchal Dental College & Hospital, Garhwa. Out of 100 (hundred), 50 (fifty) patients were obese and 50 (fifty) non obese individuals of normal weight were enrolled in the study. The clinical parameters to evaluate periodontitis included assessment of Gingival index, Plaque index. All the patients were affected with chronic generalized periodontitis. Inclusion criteria for the present study included:

- Patients in between the age group of 25 to 55 years,
- Patients with negative history of any other systemic illness,
- Patients with negative history of any known drug allergy,
- Patients with chronic generalized periodontitis

Various following periodontal parameter were calculated were gingival index, Plaque index, Pocket probing depth (PP), clinical attachment level (CAL).[10]

STATISTICAL ANALYSIS

Assessment of all the results was done by SPSS software. Chi- square test and student t test were used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

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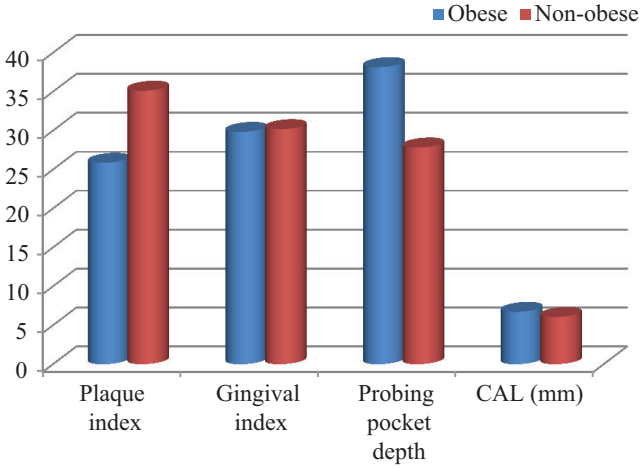
Parameter	Obese	Non-obese	P- value
Mean age (years)	38.8	39.1	0.87
Mean BMI (Kg/m^2)	31.6	23.5	0.00*
WC (cm)	99.2	55.4	0.00*
*: Significant			

Table-1: Comparison of demographic details

Parameter	Obese	Non-obese	P- value
Plaque index	25.85	35.11	0.00*
Gingival index	29.82	30.17	0.82
Probing pocket depth	38.14	27.82	0.00*
CAL (mm)	6.71	6.05	0.00*
*: Significant			

Table-2: Intergroup comparison of clinical parameters



Graph-1: Intergroup comparison of clinical parameters

RESULTS

A total of 50 obese patients with chronic periodontitis and non-obese normal weighed subjects with chronic periodontitis were included in the present study. Mean age of the obese and non-obese subjects was 38.8 years and 39.1 years respectively. Mean BMI of the subjects of the present study was 31.6 and 23.5 Kg/m^2 respectively.

Mean plaque index of the subjects of the obese group and the non-obese group was 25.85 and 35.11 respectively. Mean gingival index of the subjects of the obese group and non-obese group were 29.82 and 30.17 respectively. Significant results were obtained while comparing the plaque index in between subjects of the obese group and non-obese group. Significant results were obtained while comparing the CAL and probing pocket depth in between the subjects of the obese group and non-obese group respectively.

DISCUSSION

In the present study, a total of 50 obese patients with chronic periodontitis and non-obese normal weighed subjects with chronic periodontitis were included in the present study. Mean age of the obese and non-obese subjects was 38.8 years and 39.1 years respectively. Mean BMI of the subjects of the present study was 31.6 and 23.5 Kg/m^2 respectively. As per the study by Martinez-Herrera M et al a detailed review was provided to establish association between obesity and periodontal condition, and to govern the underlying pathophysiology in this context. Searches were performed in the PubMed-Medline and Embase databases. Clinical trials and observational surveys related to the periodontal and body composition were selected. A total of 284 articles were picked and ultimately 28 were finally included in the study. Most of the studies showed that periodontal disease and obesity are closely related except two studies that showed no association.[11] Mean plaque index of the subjects of the obese group and the non-obese group was 25.85 and 35.11 respectively. Mean gingival index of the subjects of the obese group and non-obese group were 29.82 and 30.17 respectively. Significant results were obtained while comparing the plaque index in between subjects of the obese group and non-obese group. Chaffee BW et al compiled the signs of obesity and periodontal disease association from the epidemiologic surveys and deprived a quantitative summary of this association. Searches were carried on MEDLINE, BIOSIS, Cochrane Library, Brazilian Bibliography of Dentistry and various other databases and the related studies summarized to standardized forms. This search extracted 554 unique citations with 70 studies that met the inclusion criteria, out of which 57 were on independent populations. There were 41 studies that suggested a positive association. There was stronger association amongst young adults, females and smokers. There was a greater clinical attachment loss amongst obese individuals, subjects with high BMI had more incidence of periodontitis. This positive suggestion was reliable and coherent with a biologically believable role of obesity in development of periodontal condition.[12] Significant results were obtained while comparing the CAL and probing pocket depth in between the subjects of the obese group and non-obese group respectively. Al-Zahrani MS et al examined the relation between body weight and periodontal disease in a representative United States sample. The inclusion criteria included subjects that were greater than or equal to 18 years and had underwent a periodontal examination were included for the analysis (n = 13,665). Body mass index and circumference of waist were used to determine overall and abdominal fat ratio, respectively. They found that significant association with age were seen and analyses was then stratified by age under the groups as younger, middle-aged and older adults. A significant relationship was seen between the body fat measures and periodontal condition amongst the younger adults, but not the middle or older subjects. Young subjects with higher waist circumference had an adjusted OR with value of 2.27 in the range between 1.480 to 3.487 for having periodontal disease. In a younger subject, overall and abdominal obesity were associated with elevated prevalence of periodontal condition, while underweight were associated with reduced prevalence. Obesity can be regarded as a potential risk factor for periodontal condition especially amongst young subjects.[13]

CONCLUSION

From the above study, it can be concluded that obese patients are associated with more sever level periodontitis in comparison to the normal weighed subjects. However; further studies are recommended.

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