

Relationship between Hyperlipidemia and Periodontal Inflammation among Patients of Hypothyroidism

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ABSTRACT

Objective: The study was conducted to assess the relationship between hyperlipidemia and periodontal inflammation among patients of hypothyroidism

Method: Current study was analytical cross-sectional in nature. Data was collected from 479 patients coming to the dental section OPD of a tertiary care hospital in Lahore. Patients with periodontitis and had hypothyroidism were taken as participants of study. Periodontitis was assessed by clinical examination. Gender and age was taken as demographic variables. Frequencies and percentages were calculated. Chi-square was used to assess.

Results: The results of chi-square revealed that there is a significant difference between the levels of cholesterol and occurrence of periodontitis ($X^2=25.09$, $P=.001$). Participants with normal level of cholesterol and have periodontitis were 65(13.57%), with level of cholesterol at borderline and have periodontitis were 135(28.18%) and participants with high level of cholesterol and have periodontitis were 279(58.25%).

Conclusion: Cholesterol levels affect periodontal health in hypothyroidism patients.

Keywords: Hyperlipidemia, Periodontitis, Hypothyroidism, Cholesterol

INTRODUCTION

Periodontal pathosis is known as the relationship between bacterial plaque biofilm and immune-inflammatory host reaction following disproportion of osseous homeostasis and homeostasis of connective tissues. The local damage of periodontium in oral cavity is known as periodontitis but the available literature evident that periodontitis may change the systemic of patient.¹

The biochemical changes occur in the body due to the occurrence of oral diseases which have negative effects on systemic health resulted in alteration in lipid profile, occurrence of inflammation and disturbance in the proteins. These biochemical changes could be due to the alteration in the working of endocrine glands, disrupts the cardiovascular system and may cause serious complications during pregnancy. On the teeth surface, existence of gram -ve bacteria making microbial biofilm are designated as the reason for such adverse systemic health issues.² The inflammatory process starts and continued due to the invading of toxins produced by bacteria and lipid-polysaccharide complexes to the gingival tissues. Increased level of fibrinogen as well as C-reactive protein is linked with the periodontitis, irrespective of the co-occurrence of coronary diseases. The altered production of enzymes and makers could be evaluated in saliva and serum of the patient with periodontal inflammations.³

Alteration in lipid profile is an indicator of pathogens' generation linked to cardiovascular diseases.⁴ Low level of high density lipoproteins, high level of triglycerides and increased level of low density lipoproteins are the commonly prevalent alterations.⁴ Interaction between macrophage cell membrane and lipids hinder the receptors of other enzymes and membranes. The relationship was

found between the prevalence of periodontitis and alterations in macrophage gene expression of polypeptide growth factors as well as pro-inflammatory cytokines.⁵

The study was conducted to assess the relationship between hyperlipidemia and periodontal inflammation among patients of hypothyroidism as it is evident that there are many systemic diseases which are linked with such conditions.⁶

METHODOLOGY

Current study was analytical cross-sectional in nature. Data was collected from the patients coming to the dental section OPD of a tertiary care hospital in Lahore. Patients with periodontitis and had hypothyroidism were taken as participants of study. Data was collected from 479 patients coming for dental treatment in the periodontology department after taking consent from the patients to participate in the study at voluntarily bases. Level of cholesterol was assessed by lipid profile after taking blood sample and the value of high cholesterol was taken as 240mg/dl and above. Blood sample was taken for T4, T3 and TSH. Periodontitis was assessed by clinical examination. Gender and age was taken as demographic variables. Frequencies and percentages were calculated. Chi-square was used to assess the relationship between hyperlipidemia and periodontal inflammation among patients of hypothyroidism

RESULTS

According to gender wise distribution of data, males were 206(43.01%) and females were 273(56.99%).

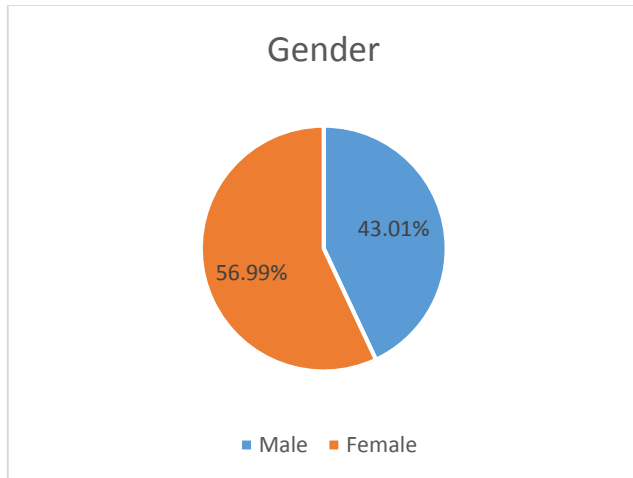
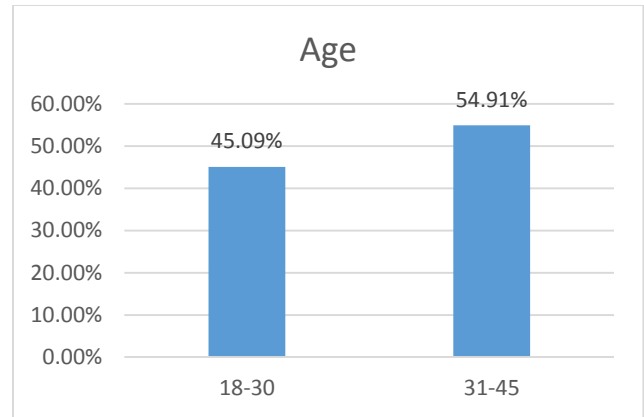


Figure 1: Gender wise Data Distribution

There were two age groups, one was 18-30years and other was 31-45years. Participants fall under group 1 was 45.09% and group II was 54.91%.



Graph 1:| Age wise Data Distribution

The results of chi-square revealed that there is a significant difference between the levels of cholesterol and occurrence of periodontitis ($X^2=25.09$, $P=.001$). Participants with normal level of cholesterol and have periodontitis were 65(13.57%), with level of cholesterol at borderline and have periodontitis were 135(28.18%) and participants with high level of cholesterol and have periodontitis were 279(58.25%).

Table 1: Level of cholesterol and periodontitis

Cholesterol Level	Periodontitis (n=479)		X^2	Sig.
	≤180mg/dL	Normal		
181-239mg/dL	65(13.57%)	Borderline	25.09	.001
≥240mg/dL	135(28.18%)	Hyperlipidemia		
	279(58.25%)			

DISCUSSION

Current study aimed to explore the relationship between hyperlipidemia and periodontal inflammation among patients of hypothyroidism. The study findings verified a significant difference between the levels of cholesterol and occurrence of periodontitis. This suggested that as the level of cholesterol increases, the prevalence of periodontitis also increase. The results of current study are in line with another study which showed that prevalence of periodontitis is more among patients of hyperlipidemia as compared to the group who have normal level of cholesterol but this relation was not significant.⁷ Machado et al.⁸ reported no difference between the prevalence of periodontitis and levels of cholesterol as compared to the normal ones. Similar results were concluded by a study conducted by Banihashemrad et al.⁹ Association between levels of cholesterol and prevalence of periodontal disease was explored and reported by various studies which suggested that patients with higher cholesterol levels have periodontitis.^{10,11,12}

Participants with normal level of cholesterol and have periodontitis were 65(13.57%), with level of cholesterol at borderline and have periodontitis were 135(28.18%) and participants with high level of cholesterol and have periodontitis were 279(58.25%).

To conclude, cholesterol levels affect periodontal health in hypothyroidism patients.

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