

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/jpfa

Serum lipoproteins and chronic periodontitis – A diagnostic dilemma

H.S. Grover, Rohit Saini*, Shweta Dikshit, Anshu Blaggana

Faculty of Dental Sciences, SGT University, Gurgaon, Haryana 122001, India

ARTICLE INFO

Article history:

Available online 11 November 2015

Keywords:

Chronic periodontitis
High-density lipoprotein (HDL)
Low-density lipoprotein (LDL)
Cholesterol
Triglycerides

ABSTRACT

Objective: To check whether any association can be established between chronic periodontitis and abnormal serum lipoproteins levels.

Methods: A case–control study was designed including 72 subjects (both male and female) falling in the age group of 30–60 years, reporting to the department of periodontology of Faculty of dental sciences; of which, 37 were established as cases, and 35 were identified as controls based on clinical and periodontal parameters. Clinical parameters included serum lipoproteins such as high-density lipoproteins (HDLs), low-density lipoproteins (LDLs), cholesterol, and triglycerides, and the periodontal parameters included clinical attachment level (CAL) and probing pocket depth (PPD).

Results: A statistically significant increase in the incidence of periodontitis was noticed with increasing age ($p = 0.05$). However, a comparison of gender with incidence of periodontitis failed to reveal significant results ($p > 0.087$). Statistically significant results were not obtained ($p > 0.05$), when mean values for each variable viz. HDL, LDL, Cholesterol and TG were compared among cases and controls.

Conclusion: No statistically significant results could be established; as a result, more samples along with controlled confounding factors need to be judged to establish any possible link between chronic periodontitis and abnormal serum lipoprotein levels.

© 2015 Pierre Fauchard Academy (India Section). Published by Elsevier, a division of Reed Elsevier India, Pvt. Ltd. All rights reserved.

1. Introduction

Sedentary lifestyle is a norm in urban societies. Compounded with an altered diet pattern inclusive of refined food materials, a propensity of obesity and various cardiovascular diseases increases. Among the numerous risk factors implicated in causation of cardiovascular disease, smoking, hypertension, diabetes, and hyperlipidemia are the most important factors.¹

Defined as low serum high-density lipoprotein (HDL) cholesterol concentration and high serum total cholesterol levels, triglycerides and low-density lipoproteins (LDLs)

cholesterol, hyperlipidemia has been identified to affect mostly the industrialized population. Apart from the traditional ones, several viral infections, such as Coxsackie viruses, have also been identified in making an individual more susceptible to cardiovascular diseases.² Additionally, numerous bacterial infections have also been linked with abnormal cardiac health.³

Periodontitis is an inflammation of the periodontium induced by bacterial biofilm present in the gingival margin. Commonly present bacteria, residing in bacterial plaque when come in contact with host tissue, lead to release of pro-inflammatory cytokines due to the presence of LPS in the

* Corresponding author. Tel.: +91 9999103668.

E-mail address: rohitsaini1903@gmail.com (R. Saini).

<http://dx.doi.org/10.1016/j.jpfa.2015.09.002>

0970-2199/© 2015 Pierre Fauchard Academy (India Section). Published by Elsevier, a division of Reed Elsevier India, Pvt. Ltd. All rights reserved.

bacterial cell wall. This effect may be accentuated in case of a susceptible host. These pro-inflammatory cytokines such as Interleukin-1 β (IL-1 β) and tumor necrosis factor- α (TNF- α) lead to deranged lipid profile thereby producing hyperlipidemia.⁴ IL-1 β simultaneously causes bone loss due to activation of osteoclast.⁵ Several observational epidemiological studies have established that poor periodontal health status may contribute toward an increased risk for cardiovascular disease.⁶⁻⁸ However in contrast, some studies have found no such association.^{9,10}

It is, therefore, necessary to establish, whether there exists actually any association between chronic periodontitis and abnormal serum lipoproteins that might later lead to cardiac problems. Henceforth, keeping the above facts in mind, this study was designed to establish if any co-relation exists between serum lipid profile and the advent of chronic periodontitis.

2. Material and methods

A case-control study was designed including 72 subjects (both male and female) falling in the age group of 30-60 years, reporting to the department of periodontology of Faculty of dental sciences, SGT University, Gurgaon, Haryana, India. 37 subjects were identified as part of the experimental group based on the inclusion criteria of having at least 30% of sites with clinical attachment loss ≥ 4 mm and at least 4 sites with clinical attachment loss ≥ 6 mm, while examining with a William's periodontal probe. Controls, i.e., 35 healthy volunteers were identified as having ≥ 20 teeth in the mouth including third molars, bleeding on probing (BOP) at less than 30% of sites with probing pocket depth (PPD) of 1-3 mm, and clinical attachment loss (CAL) of < 3 mm at $< 30\%$ of the sites in the mouth.¹¹

Patients with unfavorable systemic conditions (rheumatic fever or heart problems requiring prophylactic antibiotic treatment and kidney disease), pregnant women, women on hormone replacement therapy or hormonal contraceptives, patients taking steroidal or non-steroidal anti-inflammatory

drugs or antibiotics (previous 3 months), smokers, alcoholics, hypertensive (with BP above 130/90 mmHg), diabetics as assessed by blood sugar [fasting and post prandial] were excluded from the study. Patients were designated as diabetic, if fasting blood glucose level was diagnosed as ≥ 126 mg/dl, and postprandial blood glucose was assessed to be ≥ 200 mg/dl.

An informed consent was obtained from all the individuals, and all of them were referred to the Department of Biochemistry, SGT University for serum lipid examination, which included HDL, LDL, total cholesterol, and triglycerides levels. The abnormal range for HDL cholesterol was identified as < 30 mg/dl, for LDL cholesterol > 180 mg/dl, for total cholesterol > 250 mg/dl, and for triglycerides > 200 mg/dl.¹²

The study was carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki).

3. Results

In this study, Student's t-test was used for statistical analysis of both demographic variables, viz. age and gender and clinical parameters, viz. PPD and clinical attachment level (CAL) (Tables 1 and 2).

Pearson's chi-square test was used for establishment of correlation between serum lipoprotein levels among persons with chronic periodontitis and persons without the disease (Tables 3 and 4).

There was a statistically significant increase in incidence of periodontitis with increasing age ($p = 0.05$). However, a comparison of gender with incidence of periodontitis failed to reveal significant results ($p > 0.087$). Significant correlation was observed with respect to both periodontal factors, such as PPD and CAL ($p < 0.001$), when measured using a William's periodontal probe (Hu Freidy) among cases and controls. No statistically significant results were obtained ($p > 0.05$), when mean values for each variable viz. HDL, LDL, cholesterol and TG were compared among cases and controls.

In Table 4, variables were shown to have grouped as normal and abnormal on the basis of various serum lipoprotein levels,

Table 1 – Demographic variables.

Group	Age (years)		Gender (M/F)	
	Mean	Std. deviation	Male	Female
Without periodontitis (controls)	35.74	5.41	24	11
With periodontitis (cases)	38.76	6.99	18	19
p-Value	0.05		0.087	

Table 2 – Comparative evaluation of PPD and CAL among cases and controls (in mm).

Group	PPD		CAL	
	Mean	Std. deviation	Mean	Std. deviation
Without periodontitis (controls)	1.90	0.46	0.00	0.00
With periodontitis (cases)	4.18	0.59	4.31	0.58
p-Value	< 0.001		< 0.001	

Download English Version:

<https://daneshyari.com/en/article/3160162>

Download Persian Version:

<https://daneshyari.com/article/3160162>

[Daneshyari.com](https://daneshyari.com)