

Association between Coronary Heart Disease and Chronic Periodontitis

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Introduction

The periodontium is a supporting tissue of the dentition. Periodontal diseases are the oldest diseases which is a low grade chronic infectious disease caused by gram negative anaerobic organisms. Apart from direct destruction there is an activation of the immune inflammatory response. [1]

There has been substantial evidence linking periodontal diseases to the systemic one. Apart from the list of systemic diseases it is known that there is an association with atherosclerosis in ischemic heart disease. [1,3]

The proposed mechanism is that periodontal infection may have increased the levels of plasma fibrinogen, white blood cells count and von Willebrand's factor hence increasing the blood viscosity and thereby posing as a risk factor for ischemic heart disease. [2,3,5]

Aims and Objectives

- To compare the severity of periodontal disease on coronary heart disease status
- To evaluate the influence of periodontitis on coronary heart disease

Materials and Methods

The following cross sectional study was conducted in the department of Periodontics, Dr. BR Ambedkar College of

Dental Science and Hospital, in association with Reuben memorial hospital, Patna.

Inclusion Criteria

- Patients with ischemic heart disease diagnosed based on history, clinical findings and biochemical markers.
- Presence of atleast 20 teeth

Exclusion Criteria

- Completely edentulous patients
- Patients with other systemic diseases.

After screening the patients, the written informed consent was obtained. Patient's detailed case history, blood investigations, status of ischemic heart disease was recorded. The periodontal staus was assessed by using CPITN index.

The CPITN index is scored as follows;

CODE X – When only one tooth or no teeth are present in a sextant

CODE 0 – No periodontal disease

CODE 1 – Bleeding observed during or after probing

CODE 2 – Calculus or other plaque retentive factors either seen or felt during probing

CODE 3 – Pathological pocket 4 – 5 mm in depth with gingival margin on black band of probe

CODE 4 – Pathological pocket 6mm or more in depth, black band of the probe not visible

In the same way, the ischemic heart disease was graded as Mild, Moderate, Severe respectively based on the number of coronary vessels involved and ejection fraction of the patient.

Results

The data was analysed using Chi square test and $p < 0.05$ is considered as significant. The statistical analysis was performed by using SPSS version – 15 package.

Table 1 depicts the mean age of the individuals that were recruited for the study.

Table 1:

Minimum age	Maximum age	Mean	Standard Deviation	
31	75	55.77		11.60

Table 2 depicts the comparisons between the CPITN grades with the severity of coronary vessel disease.

Table 2: Comparison between CPITN grades with Ischemic heart disease

Cpitr Score	Ischemic Heart Disease				Total
	Normal	Mild	Moderate	Severe	
1.	75%	16.7%	0	8.2%	15%
2.	67.8%	6.5%	22.7%	3.3%	38.65 %
3.	50%	25%	21.3%	3.5%	35%
4.	44.3%	22.1%	33.3%	0	11%

Chi – square value = 9.3 $p = 0.41$ [> 0.05]

Inference: No association between CPITN score and severity of ischemic heart disease.

Discussion

In recent times it has been observed that there is a mild to moderate association between periodontitis and coronary artery disease. [4]

This cross sectional study compares the severity of ischemic heart disease as assessed by angiogram and echocardiogram with the periodontal health status. For the current study 100 patients were recruited and their periodontal as well as cardiac history was recorded.

The study population included patients aged between 31 – 75 years with the mean average being 55.7 years. [Table 1]

When severity of periodontal disease was assessed by CPITN index the score was 4 among 11% of the population and lowest being 15% of the population. [Table 2]

The Chi square value obtained was 9.3 and $p = 0.410$ which implies that there was no association between severity of periodontitis with that of severity of coronary disease according to a study by Masaki et al. [6]

Conclusion

The present study demonstrated that severity of periodontal disease may not have any significant effect on ischemic heart disease status. This study did have certain limitations such as the effect of smoking, body mass index and physical activity which could also effect coronary diseases.

References

1. Textbook of Clinical Periodontology; 10th edition; Newman, Takei. Saunders publication.
2. Blaizot.A, Vergnes.J et al; Periodontal diseases and Coronary heart diseases events : meta-analysis of observational studies; I.Dent.Journal 2009 59;p.197 - 209
3. Haraszthy. V, Zambon, JJ, Trevisan M; et al: Identification of periodontal pathogens in atheromatous plaque. J periodontal 2000;71;p.1554-1560

4. Beck. J, Gracia. R, Heiss.G et al;Periodontal disease and Cardiovascular disease; J Periodontol 1996;67;p.1123 – 1137
5. Kolltveit, K et al. Is observed association between periodontitis and atherosclerosis casual; Euro J Oral Sci 2001;109;p2-7
6. Miyaki.K et al. Periodontal diseases and atherosclerosis from the view point of the relationship between community periodontal index of treatment needs and brachial ankle pulse wave velocity. BMC Public Health 2006;p.1