Periodontal condition among cardiovascular diseased patients at Al-Karama teaching hospital


ABSTRACT

Background: The present study is a clinical approach concerning the relation between cardiovascular illness and periodontal diseases.

Patient and Methods: 104 patients (male & female) were selected at the coronary care unit department and general medical wards at medical department in Al-Karama teaching hospital, were submitted to clinical and investigational examination.

Results: Out of 104 patients 75 were positive for periodontitis and 27 were not affected.

Conclusion: There is strong relationship between atherosclerosis (including cardiovascular diseases) and periodontitis. People are not healthy without good oral hygiene, keyword: C.V.D. (cardiovascular disease) atherosclerosis, C.C.U. (coronary care unit), periodontitis. (J Bagh Coll Dentistry 2012; 24(4):109-111).

INTRODUCTION

Cardiovascular disease is a common problem. Mostly related to atherosclerotic changes of C.V. system this major problem may show a link with periodontitis. Dissemination of oral microbes into blood stream is common within less than one hour after an oral procedure, (1). A study in mice showed that Porphyromonas Gingivalis (P. Gingivalis) and Streptococcus Sanguis may accelerates Atherosclerosis. This oral bacteria induce platelet aggregation that leads to thrombus formation and indirectly increases systemic inflammatory process. Periodontitis is an infection may stimulate the liver to produce c-reactive protein [C.R.P] it is a marker of inflammation it deposits on injured blood vessel C.R.P. binds to damaged cells and fixes complement and activates phagocytes and these cells release nitric oxide (NO) that contributes to Atheroma. Formation (2).

Also mean plasma C.R.P. level is higher in periodontitis patient. Factors that place individuals at high risk of periodontitis may also place them at high risk, for C.V.D. the proinflamatory cytokines TNF-a, IL-1B and Gama interferon and prostaglandin E2 reach high tissue concentrate in periodontitis 1L-1B favors coagulation and thrombosis and retard fibrinolysis. IL-1 and TNF- a and thromboxan can cause platelet adhesion and cholesterol deposition, it is stated that in the release of high levels of proinflamatory mediators (PG2, TNF-a, IL-1B) in periodontitis their peripheral blood monocytes is hyperinflammatory monocyte phenotype they secrets 3-10 fold greater amounts of these mediator so patients with refractory periodontitis posses a hyperinflammatory monocyte phenotype and high level of proinflamatory mediators (3). Recently a specific heat shock protein (HSP 65) is a protein important for maintenance of normal cellular function and has virulence factor for bacteria this protein is stimulated by chronic oral infection in subjects with high C.V.D. risk, thus antibodies directed towards (H.SP 65) cross react with this protein expressed in host tissue in the lining of blood vessel so some oral species might be the link between oral infection and C.V.D., (4) other important mechanism for atherosclerosis and periodontal infection is that antibody reacts with periodontal organisms localizes in the heart and trigger compliment activation and T-cell sensitization that leads to cardiovascular disease. further more one or more of periodontal pathogens have been found in 42% of atheroma plaque in severe periodontitis.

A recent preliminary report showed that atherosclerotic plaques are commonly infected with gram negative periodontal pathogens as P. gingivalis and Actinomycete comitane, (5). Carotid atherosclerosis as a measurement of intima thickness increase with higher level of periodontal bacteria. Other important mechanism for atherosclerosis and periodontitis is that antibody reactive to periodontal organisms localize in the heart and trigger complement activation and T-cell sensitization and heart disease, furthermore one or more of periodontal pathogens have been found in 42% of atheroma in severe periodontitis. (6).

Proteolytic enzymes refered to as Gingipains R which is released in large quantities from P. Gingivalis is after entering circulation can activate factor X, protein-C and prothrombine leading to thrombotic tendency and clot formation, (7).

PATIENTS AND METHODS

One hundred and four patients at C.C.U. and general medical wards at Al-Karama Teaching Hospital, with middle aged groups (50-60 years old)
with atherosclerotic, cardiovascular disease like angina pectoris and heart failure and diabetes mellitus as a cause of premature atherosclerosis that leads to cardiovascular diseases. Those groups of patients were selected to confirm the presence of periodontal disease in addition to their original (C.V.D.). Those patients actually were treated as a medical case by anti-ischemic measure and antihypertensives or anti diabetic treatment like insulin or oral hypoglycemic treatment at the same time, we found a significant number of those selected patients that they had periodontal diseases in about 76 out of 104 patients, the diagnosis and parameters of periodontitis were confirmed by specialist dentist like (gum recession and teeth mobility) after exclusion of other causes of periodontal problems like gingival trauma and bad oral hygiene. Those patients were submitted to clinical and investigational tests [ECG - Echo study of heart + Lipid Profile + Blood Sugar], the study included patients with C.V.D. (angina pectoris + myocardial infarction + peripheral vascular insufficiency including hypertensives + diabetes) over one year period, from July 2009 till the end of June 2010, it is wise to mention that not all of the patients in this study were diabetic.

RESULTS AND DISCUSSION

Out of total number [104] there were 63 male and 41 female those have cardiovascular diseases (atherosclerosis at coronary care unit and general medical wards).

The study showed that 48 males were positive and 15 were negative. On other hand 28 of female were positive for periodontitis and only 13 female were negative for this problem.

Figure 1: Pie chart showing male to female ratio. 76 of male and female were found to have periodontitis and only 28 were not affected.

Figure 2: Prevalence of periodontitis in C.V.D. patients

Figure 3: Bar chart showing distribution of periodontitis among CVD patients by gender.

This may indicate the other pathogenic factors for atherosclerosis and related cardiovascular illness like oral cavity infection.

The study clearly indicates the obvious relation between C.V.D. and periodontitis, 72% were affected by C.V.D. + periodontitis and 28 were negative for periodontitis although they had cardiovascular illness.

The number of males selected were approximately 2/3rd that of total in the hospital wards.

This was as we think related to the available number of selected patients most of admitted were male. For many reasons otherwise the results may be equal under the same pathological process that mean periodontal disease and even some of the not affected by periodontitis were well educated enough to have good oral hygiene including other pathogenesis for C.V.D. like diabetes mellitus. Some follow up of some cases indicated that good oral hygiene resulted in some improvement in general states of those patients. This oral hygiene stopped the inflammatory process that leads to atherosclerosis.

As conclusion, decades of studies showed the relation between C.V.D. (and atherosclerosis) with periodontitis. Human beings are not healthy when they have no good oral hygiene.

REFERENCES


3- Shapiro Soskone W. A. Sela MN et al. The secretion of PGE2-1L-1 beta- 1L-6-TNF by adherent mononuclear cells. J Periodontal 1994; 139.

4- Hernichel, Gorbache, et al. Vascular disease and oral