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Coronary artery disease in periodontitis rat model (Article) (Open Access)

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Abstract

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Context: Epidemiological and microbiological studies have reported association between periodontitis and coronary artery disease (CAD), experimental study that simulated cause-effect of periodontitis in CAD, however, was lacking. Aims: This study aimed to demonstrate the occurrence of coronary artery disease as a consequence of induced periodontitis in a rat model. Settings and Design: This in vivo experimental study using the post test only control group design. Methods and Material: A total of 12 rats (Rattus norvegicus) were divided into control and periodontitis groups (six rats in each group). Periodontitis was induced by injection of periodontitis bacteria Porphyromonas gingivalis in buccal gingival sulcus of left mandibular teeth, thrice a week for 4 wk. All rats were fed with normocholesterol diet. At the end of study, all rats were sacrificed. The rats'heart containing coronary arteries were removed, cut cross-sectionally and prepared for histochemistry assay. Statistical analysis used: Descriptive analysis was used to assess the frequency of CAD lesion, and t test for IMT Results: All of rats in periodontitis group demonstrated signs of CAD. Coronary artery local inflammation indicated by leukocytes and erythrocyte accumulation were identified in all rats in periodontitis group (100 %). Parameters of intimal collagen disintegration and endotelial disintegration were also commonly occured (91.66 % each), atheroma (41.66 %), stenosis (41.66 %). Periodontis group demonstrated significantly higher mean IMT ($p < 0.05$) compared to control group, 3.6 μm ± 1.4 μm and 2.1 μm ± 0.7 μm, respectively. Conclusions: Periodontitis induced CAD. Periodontitis rat model might be used to represent as atherosclerotic model as well.

SciVal Topic Prominence

Topic: Periodontiti | Tooth Loss | Porphyromonas Gingivali

Prominence percentile: 93.330

Author keywords

Atherosclerotic model | In vivo | Intima-media thickness | Porphyromonas gingivalis

Indexed keywords

EMTREE drug terms: collagen

EMTREE medical terms:

animal experiment | animal model | animal tissue | Article | atheroma | controlled study | coronary artery disease | coronary artery obstruction | erythrocyte | experimental study | histochemistry | in vivo study | leukocyte | male | nonhuman | periodontitis | Porphyromonas gingivalis | rat | rat model

Chemicals and CAS Registry Numbers:

collagen, 9007-34-5

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