

### IN BRIEF

- The study results indicate a definite association between periodontal disease and acute myocardial infarction, a finding of significant public health importance.
- Dental infections by way of decayed teeth are also found to be significantly associated with acute myocardial infarction.
- Although stressing the relation between dental infections and acute myocardial infarction, the importance of serum lipids in the occurrence of coronary heart disease is also shown.

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# Periodontal disease and the risk of AMI

Periodontal disease as a risk factor for acute myocardial infarction. A case-control study in Goans highlighting a review of the literature **S. Kaisare,<sup>1</sup> J. Rao<sup>2</sup> and N. Dubashi<sup>3</sup>**

## ABSTRACT

### Objectives

The aim of the present study was to investigate the possible association between periodontal health and acute myocardial infarction (AMI) in a case-control design.

### Materials and methods

A total of 500 patients, 250 with AMI and 250 with coronary heart disease (CHD) were included in this study. The patients in the AMI group were admitted in the department of Medicine, Goa Medical College and Hospital, Bambolim-Goa because of AMI. The patients in the CHD group had no documented history of recent acute coronary events. Medical history was taken and data on serum lipid values, decayed teeth, missing teeth, filled teeth, probing depth (PD), simplified oral hygiene index (OHI-S) and bleeding on probing (BOP) were recorded. Sample proportions were compared by Pearson's chi-square test and quantitative variables with Student's t-test. The relation of clinical parameters and conventional risk factors with AMI was assessed with multivariate logistic regression analysis.

### Results

All the serum lipids and dental parameters were statistically different between AMI and CHD groups ( $p < 0.05$ ). Logistic regression analysis showed that serum lipids, number of decayed teeth, mean PD, percentage of sites with BOP, and oral hygiene were significantly associated with AMI ( $p < 0.05$ ).

### Conclusion

The results of this study indicate that periodontal disease may be associated with AMI. We propose that prospective randomised studies are needed to determine whether periodontal disease is a risk factor in the occurrence of AMI.

## EDITOR'S SUMMARY

The possible links between periodontal disease and coronary heart disease have been the subject of debate since the end of the last century and although there is a gradually increasing body of research, the actual evidence of a direct link still seems illusive. However, this does not deflect researchers from continuing to seek other angles on the subject and with differing populations.

This paper does seem to suggest that there is a significant connection between oral health and acute cardiac episodes, although once again not providing the 'proof' that many of us would prefer to make us feel secure about our knowledge, one way or the other. This is also true for our patients of course, who read about these matters in the press, access them on the Internet and hear about them through other media. Consequently we get asked questions about possible connections, which we are expected to confidently answer.

Explaining the confounding factors such as lifestyle, smoking, cholesterol levels and so forth is not an easy task, although this should be tackled in relation to individual patients. However, what is more straightforward is to discuss the *possible* link with oral health by suggesting that whether it is true or not, the individual is clearly not going to be disadvantaged by good oral health whereas, if the research is eventually proved correct, then poor oral health will potentially have been a substantial and possibly life debilitating shortcoming.

The paper also brings to the fore the growing importance of multidisciplinary working. As dental professionals we will increasingly be expected to liaise over our patients' general health care and if the link highlighted here does prove to be substantiated, that co-operation in terms of treatment and most specifically prevention will become paramount.

The full paper can be accessed from the *BDJ* website ([www.bdj.co.uk](http://www.bdj.co.uk)), under 'Research' in the table of contents for Volume 203 issue 3.

Stephen Hancocks OBE,  
Editor-in-Chief

DOI: 10.1038/bdj.2007.701

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**FULL PAPER DETAILS**

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Online article number E5

Refereed Paper – accepted 3 January 2007

DOI: 10.1038/bdj.2007.582

©British Dental Journal 2007; 203: E5

**AUTHOR QUESTIONS AND ANSWERS****1. Why did you undertake this research?**

Causing over 3 million deaths in India every year, coronary heart disease is assuming the form of an epidemic. Goa is a state with an area of 3,702 km and has a population of 1,343,998 (Census 2001). Goa has reported a high prevalence of coronary heart disease due to high intake of fat, sugar, and meat and low intake of vegetables and fruits. Moreover, the accumulation of extensive literature has suggested periodontal infection to be a contributing risk factor in the occurrence of coronary heart disease. The main purpose of conducting this study was to check the validity of this association in an ethnic Goan population. Keeping in mind that meticulous tooth brushing twice daily and a regular dental visit biannually is all that may be required to keep periodontal infections at bay, it may be inferred that it is relatively easier to eliminate at least one of the potential risk factors for coronary heart disease.

**2. What would you like to do next in this area to follow on from this work?**

Case-control design, although providing a higher strength of evidence as compared to cross-sectional studies, is still laden with bias. From all the work that has been done to prove an association between periodontal disease and coronary heart disease, legitimate concerns have arisen about the nature of this relationship. Since even a moderate risk contributed by periodontal disease to heart disease could lead to significant morbidity and mortality, it is imperative that further studies be conducted to evaluate this relationship. To strengthen this association, we would like to recommend a randomised interventional study, which would aim at a possible clinically meaningful reduction in heart disease resulting from the prevention or treatment of periodontal disease. The authors are working towards such a design.

**COMMENT**

The possible link between oral health (especially the extent and severity of periodontal disease) with coronary heart disease has engendered much debate. The present study by Kaisare *et al.* investigates the role of oral health between two significant cardiac groups: those with a history of coronary heart disease (control group) and those with a recent history of an acute myocardial infarction. Significant differences were noted between the groups with respect to a range of periodontal variables. In brief, those with a recent history of myocardial infarction had worse oral health (especially periodontal health) than the control group.

Does this study take us further forward in our understanding of the association between oral health and cardiac disease? In part, it does suggest that oral health may be a more significant risk factor for an acute cardiac problem (myocardial infarction). However, in this cohort other risk factors such as smoking and all measures of cholesterol were higher than the control group. The association between smoking and the extent and severity of periodontal disease cannot be ignored.

What clinical messages come out of this paper? Firstly, there are multiple risk factors for both acute myocardial infarction and coronary heart disease. For myocardial infarction, the extent and severity of periodontal disease may have greater weighting than for coronary heart disease. From the dental perspective, it does provide an opening to discuss general health matters. Patients with extensive periodontal disease, a strong smoking habit and high cholesterol do need counselling about their risk of an acute myocardial infarction.

All of these risk factors are readily treatable, but require compliance from the patient. As healthcare professionals, we do have a responsibility to our patients to advise them of potential oral risks for their general health. Evidence from this study further reinforces this stance.

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