Myocardial infarction and tooth extraction associated

Abstracted from

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Question: Are tooth extractions for dental infections compared with extractions for non-infection reasons associated with non-fatal myocardial infarction (MI)?

Study design This was a nested case control study within the Oslo study, which began in 1972/73 with the principle aim of studying prevention and epidemiology of cardiovascular diseases.

Intervention Within the Oslo study, men who attended for examination in both 1972/73 and 2000 with a self-reported history of MI (n=548) were compared to controls (n=625) selected at random from the same cohort, and matched by five-year strata for age.

Outcome measure Information on history of tooth extractions and the reasons for these extractions were obtained from a self-reported questionnaire. Reasons for tooth extractions were subgrouped into infection (marginal periodontitis and apical infection) or trauma/other causes.

Results Investigation of the association between the reason for extraction and MI, using prospective logistic analysis, found that extractions attributed to dental infections were significant predictors for risk factors in both 1972/73 and 2000.

Conclusions There was an increased association between MI and tooth extraction due to dental infection compared with tooth extraction for trauma and other reasons.

Commentary

The authors explore the relationship between reasons for dental extractions and the occurrence of non-fatal myocardial infarction (MI) in a large cohort of male patients followed for over 30 years. They hypothesised that the level of bacteraemia during dental extractions, in the presence of infection, may have a relation to the occurrence of MI.

Previous studies revealed that bacteraemia levels during dental extractions might not be different from bacteraemia from brushing, especially in patients with periodontal disease.¹⁻²

The case control design used was adequate for a harmful outcome such as MI. Cases (n=548) consisted of patients with a self-reported history of MI. Controls (625) were adequately matched by age. Other characteristics that could play a role as confounders like BMI, cholesterol levels and systolic blood pressure were not matched as well.

The history of tooth extractions and oral infections was elicited by a questionnaire, introducing the potential for recall bias and open issues with interpretation.

Interestingly data collected in 2000 showed no statistical differences in the levels of C-reactive protein between groups, while the evaluation of the current oral condition reported the presence of periodontal infection being double in the control group (50%) that of the study group (24%). Levels of C-reactive protein have been widely used in research to monitor effectiveness of periodontal therapy,³⁻⁴ and they are also used in the medical field as a risk indicator for MI.⁵

The time of the MI occurrence was not reported. Neither the time-line between the extractions and the MI nor antibiotic usage were reported. A temporal relationship could not be established. More cases had teeth extracted than controls did (92.7% versus 88.6%) during the study.

The results were presented as odds ratio (OR) with a calculated value of 1.73, with 95% CI: 1.34-2.23 between having extractions attributed to infections and developing an MI.

The authors do not discard the possibility of what they call a 'common underlying trait' for oral infections and MI as part as the effect observed.

With the methodological limitations of this observational study, the researchers concluded that the results indicate a strong association between the two entities and clearly point to the presence of the underlying infection as the factor of importance. The authors' conclusions may be limited because we can only guess that the extractions preceded the MI and that the nature of the bacteraemia is significantly different during this study from when brushing or flossing.

Practice points

- No possible conclusion about the relationship between extractions and MI can be established.

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