Contribution of dental health in cardiovascular secondary prevention

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Backgrounds: Previous studies have suggested that periodontitis is associated with cardiovascular disease (CVD), partly through exaggerated systematic inflammation through pathogens breaking into the bloodstream and their metabolic products. However, the clinical evidence in the cardiovascular secondary prevention is limited. In addition, there is a paucity of data about the contribution of comprehensively assessed dental health, including dental caries or teeth loss, to CVD incidence. Consequently, current ESC guideline for CVD prevention just briefly refers the contribution of dental health [1].

Objective: To investigate the associations between teeth loss, periodontitis, and dental caries and incident major adverse cardiovascular events (MACE) in patients with existing CVD.

Methods: Patients with known CVD who were admitted to the Department of Cardiology between May 2012 and August 2015 were prospectively, consecutively enrolled. Patients underwent comprehensive dental examinations, including counts of lost teeth, dental caries, and periodontal measurements of clinical attachment loss (CAL), periodontal probing pocket depth (PPD), and bleeding on probing (BOP) by trained periodontists during the hospital stay. We assessed the associations between these dental measures and MACE, defined as a composite of cardiac death, acute myocardial infarction, stroke, and hospital re-admission for worsened congestive heart failure, using multivariate COX proportional hazard models and restricted mean survival time (RMST) analyses. P-values were adjusted by Bonferroni methods.

Results: Among 888 patients included for the present analyses, the mean age was 63.9 (SD: 13.1) years and there were 242 (27.3%) women. During a median follow-up of 4.6 (IQR: 1.4, 6.7) years, incident MACE was confirmed in 142 patients. In multivariate COX proportional hazard models, one more tooth loss was associated with 3 (95% CI: 1, 5) % higher hazard of MACE (adjusted p=0.020). Kaplan-Meier curves showing survival from MACE according to the quartiles of teeth loss were described in Figure 1. Compared with patients with 0 to 4 lost teeth, periods free from MACE (95% CI) by 5-years of follow-up were on average shorter by 0.17 (−0.04, 0.37) years, 0.26 (0.04, 0.49) years, and 0.59 (0.34, 0.85) years in patients with 5 to 7, 8 to 13, and >13 lost teeth, respectively. The RMST differences with varied cutoff years were shown in Figure 2. There were no significant associations between the number of dental caries, CAL, PPD, and BOP and MACE incidence.

Conclusion: In hospitalized patients due to existing cardiovascular diseases, total number of lost teeth was associated with incident MACE. Given that teeth loss is an ultimate consequence of periodontitis or dental caries, the present findings imply that efforts to prevent losing teeth by maintaining dental health would be effective measures for cardiovascular secondary prevention.