Association between Periodontitis and Stroke
~A Meta-analysis Based on Periodontal Measurement Characteristics~

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Abstract: From the year 2000, an increasing number of reports have focused on the association between periodontal and cardiovascular diseases. Periodontal measurements are carried out in a number of ways, and, therefore, the grading of periodontitis in each study may differ according to the measurements used. Some previous studies included meta-analyses; however, the heterogeneity of periodontal measurements was not taken into account. Therefore, we divided periodontal measurements which are taken more frequently into two groups: Group A, which included measurements reflecting inflammation on examination, as indicated by Bleeding on Probing (BOP) and Probing Pocket Depth (PPD); and Group B, which included measurements not reflecting inflammation on examination, indicated by Clinical Attachment Loss (CAL), and analyzed the pooled odds ratios (OR) of each group.

We conducted online and manual searches, which revealed 688 articles, of which 11 fulfilled the inclusion criteria. The measurements in Group A did not reveal a significant correlation between periodontal and cerebrovascular diseases (OR = 1.35; 95% confidence interval [CI], 0.90–2.02), while Group B measurements revealed a significant positive correlation between the 2 diseases (OR = 1.96; 95% CI, 1.32–2.90). To assess the existence of publication bias, we drew funnel plots, which revealed the possibility of publication bias. In order to analyze non-published articles, a trim and fill method was used to assess Group B. After putative non-published articles were included in the analysis, a significant correlation was observed between periodontitis and cerebrovascular diseases (OR = 1.48; 95% CI, 1.07–2.06).

Differences were observed between periodontitis and cerebrovascular disease due to different periodontal measurements. BOP and PPD cannot indicate the duration of periodontal disease, while CAL is a cumulative measure that can indicate the duration of periodontitis. Therefore, a stronger association may exist between CAL and cerebrovascular disease than that of BOP or PPD. This study suggests that the association between periodontal disease and stroke may differ according to periodontal measurements. Therefore, careful analysis is required while investigating the association between periodontal and cerebrovascular diseases, and further studies are warranted.

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