Calcified Carotid Artery Atheromas in Panoramic Radiographs

Diagnostic reliability and association to cardiovascular disease, diabetes and periodontitis
and room for subheading

Nils Gustafsson

Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av odontologie doktorsexamen framläggs till offentligt förvar i Sal B, By 1D, Norrlands universitetssjukhus fredagen den 16 oktober, kl. 09:00.
Avhandlingen kommer att försvaras på svenska.

Fakultetsopponent: Docent, Annika Ekestubbe. Institutionen för odontologi, Göteborgs universitet, Göteborg, Sverige

Department of Odontology
1.89; 95% CI: 1.31 –2.73, P = 0.001) and controls (OR 1.64; 95% CI: 1.03 –2.64, P = 0.04). Elevated risk of a future cardiovascular event estimated with FRS was associated with CCAA, both among cases (OR 2.23, P < 0.01) but not among cases. Diabetes was more common among controls with than without CCAA (OR 1.58; 95% CI: 1.12 –2.23, P = 0.01) but not among cases. Diabetes was more common among controls with than without CCAA (OR 1.51; 95% CI: 1.09 to 2.10; P = 0.02) and controls (OR 1.70; 95% CI: 1.22 to 2.38; P < 0.01). No association was found between CCAA and the degree of bone loss on PR. MI had a stronger association to CCAA combined with periodontitis, than to either condition alone (OR 1.75; 95% CI, 1.11 to 2.74; P = 0.01). Elevated risk of a future cardiovascular event estimated with FRS was associated with CCAA, both among cases (OR 1.80; 95% CI: 1.31–2.73, P = 0.001) and controls (OR 1.64; 95% CI: 1.03–2.64, P = 0.04). Elevated risk of cardiovascular death according to SCORE was associated with CCAA among controls (OR 1.58; 95% CI: 1.12– 2.33, P < 0.01) but not among cases. Diabetes was more common among controls with than without CCAA (18.0% vs. 11.7%), but this association was not statistically significant after adjustments. Paper I-III included a sex-stratified analysis revealing that the results were mainly applicable on men. Paper IV: An improvement in diagnostic accuracy was observed among GDPs after a short training programme for diagnosing CCAA on PR. The sensitivity increased (41.8% to 55.7%, P = 0.02) without a decrease in specificity. The kappa values also increased (0.66 to 0.71, P = 0.04). At 1 year follow up, the improvements compared to baseline remained.

Conclusions: There is an association between CCAA on PR and MI. Clinically diagnosed periodontitis is associated with CCAA on PR, and among participants with both periodontitis and CCAA there is a higher probability of having had MI than among participants with either condition alone. An increased estimated risk of future cardiovascular events and death according to FRS and SCORE is associated with CCAA on PR. These conclusions are mainly applicable on men. Diabetes was not independently associated with CCAA on PR, possibly due to selection bias. A short training programme can significantly and sustainably improve GDPs diagnostic accuracy regarding CCAA. This indicate that GDPs could contribute to prevention of cardiovascular events and death by detecting CCAA on PR and, should be encouraged to refer patients without previous treatment of cardiovascular disease for further medical attention, and if other cardiovascular risk factors are identified, necessary treatment.

Keywords
Panoramic radiographs, cardiovascular disease, carotid artery atheromas, diabetes mellitus, oral health, periodontitis, diagnostic accuracy, myocardial infarction