

OP48

**INFLUENCE OF THE DAILY CONSUMPTION OF VEGETABLES AND FRUITS ON ARTERIAL DYSFUNCTION IN PATIENTS WITH RHEUMATOID ARTHRITIS: A CROSS-SECTIONAL STUDY EMPLOYING PULSE WAVE ANALYSIS**

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**Background** Regular vegetable-fruit consumption maintains cardiovascular (CV) health in the general population, but their effects are not explained by 'antioxidation'. Based on the 'Bradford-Hill guidelines' there is stronger evidence for the CV effects of vegetables than for fruits. Vegetables account for ~70% of nitrate intake and the recently identified 'enterosalivary circulation' permits the utilisation of dietary nitrate to maintain endothelial function. Rheumatoid arthritis (RA) is a chronic inflammatory condition with similar pathophysiological features to atherosclerosis. Individuals with RA have increased arterial dysfunction and are at increased risk of CV death. Our aim was to quantify the relationship between daily vegetable-fruit consumption and arterial dysfunction in this high risk group.

**Methods** We assessed a consecutive series of individuals with RA (more than 6 months duration) aged 40–65 years without

overt CVD attending rheumatology clinics into a cross-sectional study. Standardised assessment included supine brachial blood pressure (Omron HEM-757), non-invasive SphygmoCor pulse wave analysis (PWA) using radial applanation tonometry (a higher augmentation index, AIX%, indicates arterial dysfunction), fasting blood sample, patient questionnaire (including vegetable-fruit consumption derived from the National Health Interview Survey (NHIS) Multifactor Screener) and medical record review. Assessments took place after participants had fasted overnight and abstained from smoking, alcohol and caffeine. Multivariate analysis was used to adjust for age, sex, cholesterol, mean arterial blood pressure, smoking habit, alcohol consumption, physical activity, cumulative inflammatory burden, rheumatoid nodules, disability and university education.

**Results** We recruited 114 RA patients: 81% female, mean age 54 years, median arthritis duration 10 years, mean AIX% 31.5 (SD 7.7). Vegetables were consumed less frequently than fruits. Daily vegetable and fruit consumption were significantly correlated (Spearman's  $r$  0.54,  $p < 0.0001$ ). On unadjusted analysis daily vegetable and fruit consumption was associated with a lower AIX% (-3.2; 95% CI -6.4 to -0.1,  $p = 0.05$ ). On adjusted analysis AIX% was lower with daily vegetable consumption (-4.2; 95% CI -7.9 to -0.5;  $p = 0.003$ ), but not with daily fruit consumption (-0.02; 95% CI -3.9 to 3.8;  $p = 0.99$ ). A biological gradient (increasing arterial dysfunction with decreasing vegetable intake) was not apparent.

**Conclusions** In people with RA, who are at high risk of arterial dysfunction and CV death, the daily consumption of vegetables (but not fruits) is associated with more favourable arterial function independently of other important CV risk factors. These findings are consistent with the 'enterosalivary circulation' of nitrate having an influence on arterial function. Dietary nitrate intake may be important in maintaining CV health in people at high risk of CV-disease.