P4.7: PLASMA COPPER AND CERULOPLASMIN IN RELATION TO CAROTID-FEMORAL PULSE WAVE VELOCITY

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Copper participates in the redox mechanisms and is a cofactor of enzymes responsible for appropriate structure of elastic fibres. The aim of the study was to assess the relationship between plasma copper as well as ceruloplasmin concentrations and carotid-femoral pulse wave velocity (cPWV).

The study group, recruited from the population-based family study, included 138 parents (age 61.5±7.9 years, 57M/81F, 80.4% hypertensives) and 165 offspring (mean age 34.8±8.4 years, 79M/86F, 32.7% hypertensives). Information about each participant’s clinical data were collected with the use of standardised questionnaires. The cPWV was measured by Micro-Tip pressure transducer (Model SPT 301, Millar Instruments, Houston, Texas, USA) and the SphygmoCor system (ver. 6.31 AtCor Medical Pty., Ltd., Australia). The plasma copper concentration was determined by ICP-MS (Inductively Coupled Plasma Mass Spectrometry) and plasma ceruloplasmin concentration by ELISA test. Database management and multivariate analyses were performed with SAS software (SAS Institute, Cary, NC, version 9.3).

The average values of plasma levels were: copper (male 620.4±7.9 μg/l, female 740.9±339.3 μg/l); ceruloplasmin (male 612.6±221.6 μg/ml, female 766.7±337.0 μg/ml).

With adjustments applied for age, sex, cholesterol level, fasting glucose, body height, use of antihypertensive drugs, smoking and alcohol intake, we observed a positive correlation between the cPWV and plasma copper concentration (0.0007±0.0003, p<0.011) as well as plasma ceruloplasmin concentration (0.0007±0.0003, p=0.0095).

In our study group, higher plasma copper and ceruloplasmin concentrations were related to higher cPWV. The excess body copper might contribute to greater cPWV. The excess body copper might contribute to higher cfPWV. The excess body copper might contribute to higher cfPWV. The excess body copper might contribute to higher cfPWV.