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### **P5.28: GESTATIONAL HYPERTENSION – AN OVERLOOKED INDICATOR FOR FUTURE CARDIOVASCULAR RISK**

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## P5.26

**AMBULATORY BLOOD PRESSURE CORRELATES POSITIVELY WITH COGNITIVE SCORES IN ELDERLY PEOPLE WITH CHRONIC KIDNEY DISEASE (CKD) AND CARDIOVASCULAR DISEASE**

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**Background:** Studies have linked low blood pressure (BP) with adverse outcomes in CKD. Hypertension is treated to reduce cardiovascular events, however this may compromise cerebral perfusion by excessive lowering of blood pressure.

**Objectives:** To examine the relationships between ambulatory BP with cognitive performance.

**Methods:** 80 patients >65 years with CKD were recruited and were assessed using a range of neuropsychological tests. Scores were compared to daytime ambulatory BP. Linear correlations and multivariate regression analysis were used to measure associations. Results were recorded for those with a history of cardiovascular disease (CVD).

**Results:** 16 patients had a history of CVD. Mean age was 75.7 years (SD 5.8) and 75% were male. Mean BP was 123/70mmHg (SD 14.0/18.0). Univariate correlations showed an increase in BP was positively correlated with cognitive scores. Increasing systolic (B0.35 CI 0.11, 0.6 p<0.01) and mean arterial BP (B0.72 CI 0.33, 1.12 p<0.01) were predictive of improved Digit-Symbol Substitution test after correcting for age, while increasing systolic (B0.52 CI 0.16, 0.89 p<0.01) and mean arterial BP (B0.77 CI 0.15, 1.4 p=0.02) was predictive for improved Test of Every Day Attention (Map 1<sup>st</sup> min). Although diastolic BP was associated with MMSE (p=0.01), this was not significant when corrected for IQ.

**Conclusion:** Our results show that in patients with CVD an increase in BP was associated with better scores on tests of global cognition, attention and speed of processing. This raises the possibility that elderly people with CKD and cardiovascular disease may be vulnerable to cognitive impairment with aggressive lowering of blood pressure.

## P5.27

**PULSE PRESSURE IS A STRONG AND INDEPENDENT PREDICTOR OF INCIDENT ATRIAL FIBRILLATION IN TYPE 2 DIABETIC PATIENTS**

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**Introduction:** Atrial fibrillation (AF) is the most common cause of chronic arrhythmia in adults and is associated with an increased risk of mortality and stroke. Pulse pressure (PP), as a surrogate measure of aortic stiffness, is an important risk factor for incident AF in the general adult population. Currently, there is no information about the possible role of PP in the development of FA in people with type 2 diabetes mellitus (DM), who are at high risk of developing FA.

**Objective:** we examined whether PP is associated with the development of incident AF in type 2 DM.

**Methods:** we followed for a mean period of 6.4 years an outpatient cohort of 350 subjects with type 2 DM, who regularly attended our diabetes clinic during the years 2001-2002 and who were free from AF at baseline (age 63±10 years, 43% women). Plasma lipids, hemoglobin A1c, diabetes duration, body mass index, blood pressure, current use of medications and other risk factors for AF were measured. Electrocardiograms were performed annually.

**Results:** During the follow-up, 32 patients (9.4%) developed incident AF. Baseline clinical and biochemical characteristics of participants stratified by PP tertiles are presented in Table 1. In multivariable logistic regression analyses, PP but not systolic or mean blood pressure was independently associated with an increased risk of incident AF (adjusted-OR 1.64 for each SD increment [12.8mmHg]; 95% CI, 1.09-2.50; P: 0.019).

**Conclusions:** PP is a strong and independent predictor of new-onset AF in patients with type 2 DM.

**Table 1** Baseline characteristics of the sample stratified by tertiles of pulse pressure.

| Variables                            | I tertile<br>PP <53<br>(n=116) | II tertile<br>PP 53-60<br>(n=126) | III tertile<br>PP ≥60<br>(n=108) | P value<br>for trend |
|--------------------------------------|--------------------------------|-----------------------------------|----------------------------------|----------------------|
| Gender (M/F)                         | 67/59                          | 69/47                             | 61/47                            | 0.61                 |
| Age (years)                          | 59 ± 10                        | 63 ± 10                           | 69 ± 9                           | <0.0001              |
| Body mass index (kg/m <sup>2</sup> ) | 29.8 ± 4                       | 30.3 ± 5                          | 29.2 ± 5                         | 0.22                 |
| Diabetes duration (years)            | 5.5 ± 1.1                      | 5.9 ± 1.0                         | 6.3 ± 0.9                        | <0.0001              |
| Systolic pressure (mmHg)             | 125 ± 10                       | 141 ± 8                           | 156 ± 9                          | <0.0001              |
| Diastolic pressure (mmHg)            | 80 ± 8                         | 81 ± 8                            | 81 ± 7                           | 0.33                 |
| Mean pressure (mmHg)                 | 95 ± 8                         | 101 ± 8                           | 106 ± 7                          | <0.0001              |
| Hemoglobin A1c (%)                   | 7.6 ± 1.7                      | 7.9 ± 1.9                         | 7.7 ± 1.5                        | 0.21                 |
| Total cholesterol (mg/dl)            | 205 ± 37                       | 202 ± 41                          | 204 ± 38                         | 0.79                 |
| Creatinine (mg/dl)                   | 0.86 ± 0.2                     | 0.89 ± 0.3                        | 0.87 ± 0.2                       | 0.54                 |
| Current smokers (n)                  | 32                             | 28                                | 22                               | 0.058                |
| Obesity (n)                          | 52                             | 59                                | 40                               | 0.29                 |
| Hypertension (n)                     | 61                             | 85                                | 93                               | <0.0001              |
| Chronic kidney disease (n)           | 21                             | 36                                | 30                               | 0.11                 |
| Coronary heart disease (n)           | 10                             | 13                                | 14                               | 0.57                 |
| Left ventricular hypertrophy (n)     | 12                             | 19                                | 35                               | <0.0001              |
| Chronic heart failure (n)            | 1                              | 3                                 | 4                                | 0.33                 |
| Valvular disease (n)                 | 1                              | 2                                 | 1                                | 0.85                 |
| Incident atrial fibrillation (n)     | 3                              | 12                                | 17                               | <0.001               |

Cohort size, n=350. Data are expressed as means ± SD or absolute frequencies. P values for trends were determined by means of one-way ANOVA and chi-squared test (for categorical variables).

## P5.28

**GESTATIONAL HYPERTENSION – AN OVERLOOKED INDICATOR FOR FUTURE CARDIOVASCULAR RISK**

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**Background:** Hypertension in pregnancy affects 3-8% of women in the UK, accounting for ~ 6 maternal deaths each year, foetal growth restriction, prematurity and still birth. Both gestational hypertension (GHT) and pre-eclampsia (PET) are associated with increased cardiovascular (CV) risk in later life. Commonly, research excludes GHT or fails to investigate it separately to PET. Our study explores the haemodynamic consequences in later life, of hypertension in pregnancy.

**Method:** Data from 545 women, aged > 40 years (mean age 62 years) were analysed. Subjects underwent detailed anthropometric and haemodynamic measurement including blood pressure, aortic stiffness, wave reflections (SphygmoCor) and cardiac output (InnoCor) and completed a questionnaire regarding pregnancy. Subjects were categorised as Never pregnant (NEP), Normotensive in pregnancy (NOP), GHT and PET.

**Findings:** There was a positive association between hypertension in pregnancy and seated brachial diastolic blood pressure (SBDP; P=0.001), seated central systolic and diastolic BP (P= 0.015, P=0.001) and peripheral vascular resistance (P=0.031). Seated systolic BP was 7±17mmHg and 9±23mmHg higher and DBP was 6±9mmHg and 3±10mmHg for the GHT and PET groups respectively compared to the NEP and NOP groups. There was no association between hypertension in pregnancy and arterial stiffness or wave reflections in later life.

**Conclusion:** Our data supports GHT being a distinct phenomenon impacting adversely on blood pressure and peripheral vascular resistance in later life. Further detailed research is required to elucidate discrete mechanisms contributing to altered haemodynamics and the CV risk profile in later life, associated specifically with GHT.

## P5.29

**PULSE TIMING DIFFERENTIAL AS A MEASURE OF ARTERIAL STIFFNESS**

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A simple measurement technique for the estimation of the dilation of the brachial artery has been developed from a comparison of measurements of