Observing the natural history of blood pressure variability following acute stroke and TIA

Introduction: Blood pressure variability (BPV) in acute ischaemic stroke (AIS) may be of prognostic significance. However, further information is required in respect of its definition, measurement, and natural history to assess its utility as a novel therapeutic target following acute stroke. In this study we sought to evaluate the definitions of BPV, and the natural history of BPV following AIS and transient ischaemic attack (TIA).

Methods: This prospective multi-centre observational study enrolled consenting AIS and TIA patients within 48 hours of symptom onset. Enhanced casual blood pressure (BP) was measured using the OMRON 705-IT for 5 visits over 12 months. BPV was defined using standard deviation (SD) and coefficient of variation (CoV) of systolic BP (SBP), diastolic BP (DBP), mean arterial pressure (MAP) and pulse pressure (PP).

Results: Enhanced casual BP was evaluated in 231 AIS and TIA patients ([median (IQR)], age 71 (63–78); male, n = 145 (63%); white British, n = 209 (91%)). In observing the natural history, mean BP and BPV values steadily decreased, before gradually stabilising over 12 months. Significant differences were observed between visits for the SD of SBP ($p = 0.0435$), DBP ($p = 0.0365$), MAP ($p = 0.0133$), and PP ($p = 0.0393$); and for the CoV of MAP ($p = 0.0353$). Moreover, significant differences were reported for the mean values of SBP ($p < 0.0001$), DBP ($p < 0.0001$), MAP ($p < 0.0001$), and PP ($p = 0.0003$).

Conclusion: BPV values decrease and stabilise in the 12 months following AIS and TIA; significant differences were mainly observed when comparing BPV defined as the SD of SBP, DBP, MAP and PP between study visits.