Arterial properties in treated hypertensive subjects with low *on-treatment* diastolic pressure

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In the pursuit of better blood pressure control, diastolic pressure (DP) can be inadvertently titrated to low values. Although this is considered risky by some, the vascular implications of this condition are unknown. We conducted a retrospective analysis of non-invasively determined arterial properties in 53 hypertensive subjects with low *on treatment* diastolic pressure (≤70mmHg; LODP), 54 subjects with normal BP and spontaneously low DBP (≤70mmHg; SLDP) and 52 treated hypertensive subjects with DP >70mmHg (HNDP). Compared with untreated subjects with SLDP (≤70mmHg), subjects with LODP were ~ 8.4 years older, had higher systolic pressure (SP: 125 ± 13 vs. 116 ± 10mmHg; p<0.0001), larger waist circumference (101 ± 18 vs. 91 ± 17cm; p=0.005), higher rate of diabetes (45% vs. 10%), hyperlipidemia (87% vs. 52%) and cardiovascular disease (CVD; 33% vs. 0%: P<0.0001 for all comparisons). Despite these differences, two measures of large artery rigidity, pulse wave velocity (PWV) and augmentation index (Alx) were indistinguishable in SLDP and LODP. On the other hand, the HNDP hypertensive individuals had higher SP (147 ± 17mmHg), increased large artery rigidity manifested by the highest PWV (8.8 ± 1.2m/s; p=0.04) and the lowest large artery compliance (C1:11.7 ± 5.7ml/mmHgx10; p=0.001) and small artery compliance (C2: 3.54 ± 1.8ml/mmHgx100; p=0.001; all comparisons corrected for BP).

Thus, hypertensive subjects whose DP has been excessively lowered not only displayed better arterial properties than hypertensive subjects achieving less tight blood pressure control, but showed several entirely normal arterial features.