

ALTERED BAROREFLEX-MEDIATED CARDIOVASCULAR RESPONSES TO ACUTE HYPOTENSION IN HEART FAILURE PATIENTS COMPARED TO HEALTHY ADULTS

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Patients with heart failure (HF) exhibit baroreflex dysfunction, which is associated with increased morbidity and mortality. Orthostatic hypotension, a decrease in blood pressure (BP) upon standing, is a condition that often occurs in HF, and may be linked with altered baroreflex responsiveness in this population. However, data on baroreflex-mediated cardiovascular responses to acute hypotension in HF patients are limited. Therefore, 8 HF patients (7 men; mean \pm SEM 65 \pm 3y; ejection fraction 30.5 \pm 3.1%) and 7 healthy control (CON) adults (6 men; 65 \pm 2y) underwent 7.5 minutes of unilateral lower-limb ischemia via inflation of a thigh cuff on one leg to non-pharmacologically induce acute hypotension upon cuff deflation. Beat-to-beat systolic BP, diastolic BP, and mean arterial BP (MAP; photoplethysmographic finger cuff) and heart rate (HR; electrocardiogram) were recorded continuously before, during, and after cuff inflation. Statistical analysis involved independent-samples *t*-tests. Baseline values were not different between groups (systolic BP: 128 \pm 8 vs. 128 \pm 4mmHg; diastolic BP: 73 \pm 3 vs. 82 \pm 5mmHg; MAP: 90 \pm 3 vs. 97 \pm 4mmHg; HR: 62 \pm 2 vs. 56 \pm 2b.min⁻¹ for HF and CON, respectively; *P*>0.05). The magnitude of the induced decrease in MAP was similar in both groups (HF -11 \pm 1 vs. CON -12 \pm 2mmHg; *P*>0.05). However, the time-to-peak MAP decrease was significantly longer in HF compared to CON (HF 11 \pm 2 vs. CON 6 \pm 1s; *P*<0.05). The magnitude of the resultant HR increase was not different between groups (HF 2 \pm 1 vs. CON 4 \pm 1mmHg; *P*>0.05). However, the time-to-peak HR increase was longer in HF compared to CON (HF 9 \pm 1 vs. CON 6 \pm 1s; *P*<0.05). In conclusion, these results demonstrate that in response to acute hypotension, HF patients exhibit prolonged hypotension and a delayed tachycardic response. These findings suggest that baroreflex-mediated cardiovascular responses to acute hypotension are altered in HF compared to CON, which may be linked to the higher occurrence of orthostatic hypotension experienced in this population.

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