

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±SEM 65±3y; ejection fraction 30.5±3.1%) and 7 healthy control (CON) adults (6 men; 65±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±8 vs. 128±4mmHg; diastolic BP: 73±3 vs. 82±5mmHg; MAP: 90±3 vs. 97±4mmHg; HR: 62±2 vs. 56±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±1 vs. CON -12±2mmHg; *P*>0.05). However, the time-to-peak MAP decrease was significantly longer in HF compared to CON (HF 11±2 vs. CON 6±1s; *P*<0.05). The magnitude of the resultant HR increase was not different between groups (HF 2±1 vs. CON 4±1mmHg; *P*>0.05). However, the time-to-peak HR increase was longer in HF compared to CON (HF 9±1 vs. CON 6±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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