

Ongoing myocardial damage relates to cardiac sympathetic nervous disintegrity in patients with heart failure

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Iodine-123-metaiodobenzylguanidine (^{123}I -MIBG) has been used to assess the integrity and function of the cardiac sympathetic nervous system in patients with heart failure. Heart-type fatty acid binding protein (H-FABP) is released into the circulation when the myocardium is injured, and H-FABP has been recently used as a novel marker for the diagnosis of ongoing myocardial damage.

Objective: The aim of the present study was to compare cardiac sympathetic nervous activity assessed by ^{123}I -MIBG imaging with serum levels of H-FABP in patients with heart failure.

Methods: Fifty patients with chronic heart failure were studied. ^{123}I -MIBG imaging was carried out at 30 min (early) and 240 min (delayed) after the tracer injection. We measured serum levels of H-FABP using a sandwich enzyme linked immunosorbent assay. **Results:** Heart to mediastinum (H/M) ratios of ^{123}I -MIBG decreased and washout rate increased with higher New York Heart Association (NYHA) functional class. H-FABP, norepinephrine and brain natriuretic peptide (BNP) levels increased as the severity of NYHA class advanced. Delayed H/M ratio was significantly correlated with H-FABP ($r = -0.296$, $p = 0.029$) and BNP ($r = -0.335$, $p = 0.0213$). Myocardial washout rate of ^{123}I -MIBG was also correlated with H-FABP ($r = 0.469$, $p < 0.001$), norepinephrine ($r = 0.433$, $p = 0.005$), and BNP ($r = 0.465$, $p = 0.001$). **Conclusions:** These data suggest that cardiac sympathetic nervous activation was associated with ongoing cardiomyocyte damage characterized by an elevated serum level of H-FABP in patients with heart failure. ^{123}I -MIBG imaging is an appropriate approach to evaluate non-invasively not only cardiac sympathetic nervous activity, but also latent ongoing myocardial damage in the failing heart.

Key words: H-FABP, ^{123}I -MIBG imaging, heart failure