

## Heart failure: Intervention possibilities from imaging programmed cell loss

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Using a nuclear medicine technique and molecular imaging to "see" programmed cell loss—the body's normal way of getting rid of unneeded or abnormal cells—may help in early identification of those individuals who are at risk of developing heart failure, say researchers in the April *Journal of Nuclear Medicine*.

"Our study indicates that it is feasible to noninvasively identify cell loss—or apoptosis—in heart failure patients using annexin A5 imaging," explained Leo Hofstra, director of cardiovascular imaging at the University Hospital of Maastricht in the Netherlands. "Such a strategy may offer a new possibility for studying interventions to minimize damage to the heart muscle," he added. "This research is significant since cell loss is potentially reversible and earlier intervention could delay the development of cardiomyopathy or heart muscle disease," noted Hofstra. He indicated that additional research is needed since the study was performed on a small group of heart patients.

"Heart failure is a major health care problem," said Hofstra, "and researchers are looking at novel ways to improve patient care." With heart failure, a person's heart no longer pumps sufficient blood to the body's organs. Nearly 5 million Americans are living with heart failure—a long-term condition that tends to gradually worsen—and 550,000 new cases are diagnosed each year.

Researchers attached a radioactive substance to annexin A5, a protein that binds to dying cells, said Hofstra. They then used nuclear imaging

that produces three-dimensional computer-reconstructed images to reveal information about both structure and function to measure the amount of annexin A5 absorbed. Annexin A5 bound to the damaged heart muscle. "We discovered that higher uptake was uptake with a worse outcome. Cell death is one of the biological events that worsens left ventricular events," said Hofstra.

"Our results indicate that heart muscle cell death is an active and ongoing process in heart failure, and that annexin imaging could possibly guide treatment for heart patients and be used to determine whether a treatment was working," said Hofstra, co-author of "Noninvasive Detection of Programmed Cell Loss with <sup>99m</sup>Tc-Labeled Annexin A5 in Heart Failure." He anticipates that this research would spur development of new drugs for heart disease.

Source: Society of Nuclear Medicine

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