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Bonte F J, Parkey R W, Graham K D, Moore J & Stokely E M. A new method for radionuclide imaging of myocardial infarcts. *Radiology* **110**:473-4, 1974.
[Department of Radiology, University of Texas Health Science Center, Dallas, TX]

Using Tc-99m-stannous pyrophosphate, an agent that labels hydroxyapatite for nuclear bone imaging, the authors produced scintillation camera images of experimental myocardial infarcts in dogs. They found that tracer localization disappears with time, suggesting that this method might be applied not only to the diagnosis of human myocardial infarcts, but also to the healing process. [The *SCI*® indicates that this paper has been cited in over 290 publications.]

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In July 1973 I had recently resigned my post of chairman of the Department of Radiology to become the dean of Southwestern Medical School in the newly organized University of Texas Health Science Center at Dallas. The center's president, Charles C. Sprague, informed me that the medical school had been given an amount of money sufficient to purchase one electron microscope, but that two academic departments had emerged as contenders for the instrument. I therefore arranged a meeting with Rupert E. Billingham, chairman of the Department of Cell Biology and a renowned immunologist, and Vernie A. Stembridge, the far-famed chairman of the Department of Pathology.

Both Billingham and Stembridge produced compelling arguments on the merits of their respective research programs, and I was becoming disheartened with the prospect of having to tell one of them that the instrument would go to the other. As I was sitting there, listening to the dialogue and feeling sorry for myself, a comment by Stembridge sat me bolt upright. Stembridge, knowing of my long research interest in nuclear medicine imaging of the heart, stated that a member of his department, A.N. D'Agostino,[1] had observed the massive influx of calcium into heart muscle cells damaged by ischemia, and Stembridge suggested that this work merited pursuit at the electron-microscopic level.

I mentally abandoned the meeting and began to outline an experiment on the back of a file card. A dog would be given a myocardial infarct by intracoronary-arterial injection of metallic mercury, which yielded an infarct that was opaque to X rays and could be seen on appropriate films. At intervals after generation of the infarct we would inject small doses of technetium-99m-labeled stannous pyrophosphate, a radiopharmaceutical we were then employing for medical imaging of the skeletal system, in the hope that the radiotracer would seek out the abnormal amount of calcium in damaged myocardial cells, enabling us to outline the infarct.

As soon as the meeting ended, I suggested the experiment to my former associates in the nuclear medicine laboratory, R. Parkey, E. Stokely, K. Graham, and J. Moore. I thereupon left town to attend a meeting. When I returned, on top of my stack of accumulated mail were Polaroid nuclear images of the chest of a dog, showing ribs, sternum, and spine, as usual, but also showing a stellate bright object just behind the sternum, representing our experimental myocardial infarct.

Parkey had started infarcts in several additional animals, imaging them satisfactorily, and he had also followed the original dog to complete recovery and disappearance of the infarct from his chest image. Shortly thereafter, Parkey and J.T. Willerson converted this laboratory observation into a clinical test that they applied intensively at our principal teaching institution, Parkland Memorial Hospital.[2] The new procedure excited a good deal of interest and was carried out widely.[3,4]

In the years since then other sophisticated nuclear tests have come along, and the "infarct avid scan" is used less than it once was. However, with the development of three-dimensional imaging using single-photon computed tomography, the test is once again coming into its own.[5]

But what about the electron microscope? In order to terminate the meeting with Stembridge and Billingham, I offered to split the money in two parts and give half to each, on the condition that each of them raise the remaining funds sufficient to purchase an electron microscope. To my surprise, both agreed with alacrity, and both succeeded in the task. Thus, the institution had two scopes instead of one, and nuclear medicine had a new diagnostic procedure.

For many years numerous investigators had sought an inexpensive, noninvasive test that might be used in the detection and management of heart attacks. However, none had been developed until the procedure reported by us in this paper. Its publication catalyzed the growth of the field now known as "nuclear cardiology."

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2. **Willerson J T, Parkey R W, Bonte F J, Meyer S L, Atkins J M & Stokely E M.** Technetium stannous pyrophosphate myocardial scintigrams in patients with chest pain of varying etiology. *Circulation* 51:1046-52, 1975. (Cited 175 times.)
3. **Holman B L, Chisholm R J & Braunwald E.** The prognostic implications of acute myocardial infarct scintigraphy with 99m-Tc-pyrophosphate. *Circulation* 57:320-6, 1978. (Cited 65 times.)
4. **McLaughlin P R & Morch J E.** *Myocardial imaging.* Menlo Park: Addison-Wesley, 1985. 206 p.
5. **Corbett J R, Lewis M, Willerson J T, Nicod P H, Huxley R L, Simon T, Rude R E, Henderson E, Parkey R, Rellas J S, Buja M, Sokolov J J & Lewis S E.** ^{99m}Tc-pyrophosphate imaging in patients with acute myocardial infarction: comparison of planar imaging with single-photon tomography with and without blood pool overlay. *Circulation* 69:1120-8, 1984.

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