^{111}In-Labeled Antimyosin Scintigraphy for Detection of Cardiac and Skeletal Muscular Involvement in Hereditary Muscular Dystrophy

TO THE EDITOR: Antimyosin monoclonal antibodies or fragments labeled with ^{111}In are successfully used for the detection of myocardial disease such as infarction, myocarditis, cardiac transplant rejection and anthracycline toxicity (*1*). Because the primary abnormality in muscular dystrophy is either a shortage or an abnormal structure of dystrophin (*2*), these antibodies may provide a specific tool for the scintigraphic detection of muscular dystrophy, assuming that there is damage to the myocyte membrane permitting the antibody to pass through and bind to intracellular myosin or for the myosin to be exposed. Skeletal muscular involvement in muscular dystrophy has been successfully demonstrated by imaging with antimyosin monoclonal antibodies (*3–4*).

To observe the myocardial and skeletal muscular involvement in hereditary muscular dystrophy (HMD), a radioimmunoscintigraphic study was performed in 10 patients with a confirmed diagnosis of HMD (9 males, 1 female; mean age 8.5 y), among whom 8 were Duchenne type, 1 was Becker type and 1 was autosomal recessive HMD. Commercially available Fab fragments of the monoclonal antibody R11D10, directed against the heavy chain of cardiac myosin, were used. Patients were administered a 0.25-mg dose of murine antimyosin Fab fragments labeled with 37 MBq ^{111}InCl3 by slow intravenous injection, and whole-body scintigraphy was performed 24–48 h later. Heart-to-lung (H/L) ratios were calculated using a region-of-interest technique based on measurements of counts per pixel in cardiac muscle and lung regions. No adverse effects were observed. In 2 patients with HMD who had extensive muscle wasting, we also performed whole-body ^{201}Tl scintigraphy. Normal tracer accumulation was seen in the kidneys, liver and, to a lesser extent, bone marrow. In addition, intense antimyosin uptake into the myocardium and skeletal proximal/distal muscle groups was observed. ^{111}In-antimyosin uptake correctly detected myocardial involvement in 10 of 10 cases of muscular dystrophy in which H/L ratios were >2. These values seem to be significantly high compared with the previously reported normal H/L ratios for ^{111}In-antimyosin uptake (normal < 1.55) (*5*). The measurement of left ventricular function using cardiac echocardiography revealed normal to mildly abnormal wall motion in 7 patients and moderate to severe wall-motion abnormality in 3 patients.

To our knowledge, this is the first report on cardiac muscle damage in muscular dystrophy investigated using ^{111}In-antimyosin, a novel tracer for the evaluation of the integrity of myocardium. Considering the clinical role of ^{111}In-antimyosin imaging, it is concluded that this technique is useful for confirming cardiomyopathy in muscular dystrophy and for monitoring patient outcome. ^{111}In-antimyosin scintigraphy, in early to intermediate stages of muscular dystrophy, may be a useful method for evaluating subclinical cardiomyopathy, and the noninvasiveness of the procedure makes it an easily applicable parameter to be used in follow-up.

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Chest Pain in Women: Dobutamine Stress Echocardiography or Myocardial Perfusion Scintigraphy?

TO THE EDITOR: We read with interest the recent article by Santana-Boado et al. (*1*) and the accompanying editorial by Cacciabaudo and Hachamovitch (*2*). Application of the Diamond correction to Bayes' theorem (*3*) to a series of ^{99m}Tc-methoxyisobutyl isonitrile myocardial SPECT studies performed on a population of women suggests that test accuracy is, in fact, very similar to studies on their male counterparts. The high test diagnostic accuracy reported provides supportive evidence for using myocardial SPECT as the cornerstone of the noninvasive evaluation of chest pain in women.

We propose a similar role for dobutamine stress echocardiography. The technique requires a high level of operator skill but has a sensitivity and specificity similar to SPECT (*4,5*). We have analyzed the results of more than 400 studies in our institution, including 211 in women, of whom a select minority of 85 have had coronary angiography. Application of the Diamond correction to our series' results revealed a sensitivity of 95%, a specificity of 74% and an overall diagnostic accuracy of 84% for the detection of significant coronary artery disease in women. These figures are comparable with previously published series and similar to those using SPECT (*5*).

Dobutamine stress echocardiography is not universally available, but in expert hands it offers a quick, inexpensive and safe alternative to perfusion scanning without exposing patients to ionizing radiation. It is an "office-based" technique that has the important additional advantage of allowing patients with valvular heart disease or cardiomyopathies to be fully assessed. Current developments in the field of stress echocardiography, especially