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Characteristics of a Radionuclide Monitoring of Cardiac Function and ST-Segment

TO THE EDITOR: We read with much interest the paper by Broadhurst et al. (*J Nucl Med* 1991;32:37-43) concerning the validation of a new probe to monitor cardiac function and ST-segment. This cesium iodide nuclear probe appears to be a noninvasive and easy means of continuously monitoring global left ventricular ejection fractions (LVEF) and ST-segment. One of the main advantages of such a probe is its high sensitivity to detect changes in left ventricular function, even before symptoms (1) and electrocardiographic signs (2) appear. We totally agree with most of "ideal detector system" characteristics defined by W.N. Breisblatt (*J Nucl Med* 1991;32:44-47) in order to increase sensitivity, but we would like to underline certain points.

The type and the number of leads are crucial to the sensitivity of long-term ambulatory electrocardiography. Bipolar lead CM-V5 appears to be the most sensitive, but CM-V3 increases ischemia detection by 10% (3). CM-V5 alone could be insensitive in cases of a previous inferior myocardial infarction or when ischemic changes are restricted to anteroseptal leads (e.g., leads V1, V2, V3) (4). Therefore leads CM-V5 and CM-V3 can examine anterolateral ischemia and modified lead aVf can examine that of inferior ischemia (5). Unfortunately, no data were available in the paper of Broadhurst concerning this point. The nuclear VEST permits only the recording of a modified V5 (6).

The duration of ambulatory electrocardiography greatly influences diagnostic sensitivity, especially if the nocturnal period is covered. Indeed, the distribution of ischemic episodes over a 24-hr period in chronic stable angina displays a distinct circadian rhythm, with the maximum amount of episodes occurring between 6 am and midday (7). A similar peak incidence of myocardial infarction has been described (8). If ^{99m}Tc is used, its relatively short half-life will hinder the study of the last part of the night. The use of a radioelement with a long half-life like ¹¹¹In could lead to an increased sensitivity. The study of regional ejection fraction is known to improve the detection of myocardial ischemia. In a summary of 12 published studies (totalling 771 patients), Gibson and Beller (9) reported that the radionuclide angiogram had a sensitivity of approximately 90%, when both failure of a rise in ejection fraction and presence of a new regional wall motion abnormality were required for the test to be deemed positive. As proposed by Breisblatt, study of regional wall motion appears to be an "ideal" characteristic, but it does not necessarily require online imaging. The use of a multi-crystal probe in which

the different detectors could be separately recorded after accurate collimation is a low-cost alternative.

In order to achieve these features, an original nuclear probe is now being developed in our laboratory. Three electrocardiographic leads will be recorded as five cesium iodide detectors (e.g., anterior, lateral, septal, inferior walls, and background activity). The option of online and offline monitoring are being considered. Use of ¹¹¹In will be evaluated. Preliminary results in vitro and in vivo appear promising (10).

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False-Positives in Immunoscintigraphy

TO THE EDITOR: We do not have sufficient clinical experience to evaluate the immunoscintigraphy of cancer by ourselves, although many clinical radioimmunodetections have been performed in European countries and in the U.S. We therefore appreciated the paper of Abdel-Nabi et al. (1) published in the December issue of the *Journal*, since it gave us the chance to show our case of a false-positive in immunoscintigraphy.

A 68-yr-old woman came to the hospital in January 1989 complaining of abdominal pain. A Ba-enema revealed a mass lesion in the sigmoid colon, which was confirmed as an adenocarcinoma by biopsy. In addition, a CT scan showed a low-density area in the right lobe of the liver, indicating metastasis of the colon Ca. The plasma-CEA level was 11 ng/ml at that time. She received 40 mg of antibody ZCE-025 labeled with 74 MBq of ¹¹¹In (1 mg of ¹¹¹In-ZCE-025 mixed with 39 mg of unmodified