

50 whose probability of CAD is 0.5. This conclusion contrasts strongly with clinical practice, since as a rule either myocardial scintigraphy (MSC) is combined with radionuclide ventriculography (RVNG) or RVNG is preferred.

Further and more obviously, the conclusions of Dr. Sisson are based on more qualitative imaging of myocardium. It is now well established that computerized myocardial scintigraphy is the method of choice. We ourselves use the sectorial analysis (2) of early and delayed scans corrected for Tl-201 washout (3). Admittedly, the analysis obtained from analog images differs from that from computerized scans (4). There is general consensus that MSC is avoidable in typical angina with ST-depression in the exercise ECG (4,5). Unacceptably, the article ignores some clinically well-established indications: detection of (a) angina-free patients with CAD (5,6) for proper management (7-9), since 48% of acute myocardial infarctions are reported to occur without premonitory symptoms (10); and (b) left main and triple-vessel disease (11). Since the sensitivity of MSC in triple-vessel disease is 90%, the finding of a normal Ex-MSC reduces the probability of TVD to 10% (12). As long as there are no other noninvasive procedures with a sensitivity of 100% for the detection of CAD, MSC maintains its decisive role in suspected as well as in documented CAD, where a new dimension was added by our group: control of successful and unsuccessful transluminal coronary angioplasty of critical coronary artery stenosis (13). In practice, a combined approach by MSC and radionuclide ventriculography—both under exercise conditions—remains the procedure of choice for noninvasive detection of CAD as originally suggested (14). This at least is the line we and others have followed successfully since 1974 (15).

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Reply

Professor Hör and Dr. Maul assume that what is popular—in their terms: “clinically well-established”—is also safe, economical, and efficient practice. The many regimens prescribed for patients with angina pectoris in the past, and now discarded, controvert their assumption.

They also contend that I ignored the diagnosis of coronary artery disease in angina-free patients. My decision analysis indicates that the use of preliminary tests of coronary artery disease may be as safe as—or, with regard to life, safer than—a direct move to angiography when the *a priori* probability of diagnosis was 0.2 or less (Fig. 2). At this level of probability of coronary artery disease, patients exhibit nonischemic chest pain and therefore may be equivalent to individuals with symptomless coronary artery disease. As yet, few experimental data bear on the issue of surgical treatment of patients with coronary artery disease but without angina. When this issue was addressed, investigators determined that operations gave little if any benefit (see references 7 and 9 of Hör and Maul). When this concept was subjected to decision analysis, a similar conclusion was reached (1).

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Lymph Clearance of Radiopharmaceuticals in Rats

Although blood clearance of radiopharmaceuticals has been extensively studied in different species of animals and in human volunteers and patients, no lymph clearance study has been reported.

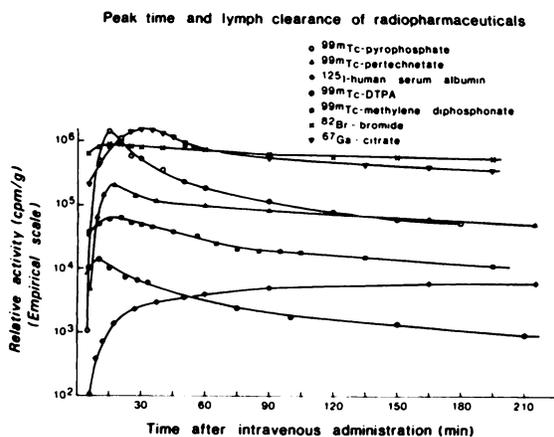


FIG. 1. Buildup and clearance of tracers in lymph of rats after intravenous administration.

Sprague-Dawley rats (250–300 g) were anesthetized with ether. The abdominal cavity was opened by a midline incision, the mesenteric lymphatic duct was cannulated with a heparinized polyethylene catheter (PE-50, i.d. = 0.58 mm, o.d. = 0.96 mm). The rat was returned to a specially designed cage. To maintain a constant fluid level, intragastric infusion of sterile isotonic saline was made through a silastic tube (1.25 ml/hr) with an infusion pump. After 30 min of lymph flow, when the lymph was free of blood, 200–300 μ Ci of various tracers were administered by tail vein. Lymph was collected in preweighed plastic tubes. The radioactivity of different radionuclides was determined with a gamma counter.

Three rats were injected with each type of radiotracer and lymph was collected for 210 min. The average radioactivity per unit weight of lymph was determined. The time courses of tracer appearance and clearance are shown in Fig. 1. Sodium bromide (Br-82), the extracellular reference marker, maintains a constant level of radioactivity. Tracers with small molecular weight (pertechnetate, Tc-99m DTPA, Tc-99m pyrophosphate, and Tc-99m MDP) reach peak concentration at 10–15 min after administration. Gallium-67 (as citrate) reaches a peak value at 30 min. Iodine-125 HSA reaches peak at 60 min and maintains that level until the end of the study period.

Lymph from all regions of the body finally enters the blood stream at the root of the neck through the main lymph ducts. The normal rate of lymph flow from different tissues, as well as the capacity of the regional lymphatics to remove the excess of extravascular fluid, varies considerably; this again changes drastically with different diseases. The rat model provides us with a simple method of investigating this important parameter of peak time and lymph clearance of radiopharmaceuticals, which warrants further study.

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Radionuclide Imaging in Drug Research. C.G. Wilson, J.G. Hardy, M. Frier, S.S. Davis, Eds. London and Canberra, Croom Helm, Ltd., 1982, 330 pp, \$44.00 (Available in the US from Biblio Distribution Center, P.O. Box 327, 81 Adams Dr., Totowa, NJ 07512)

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