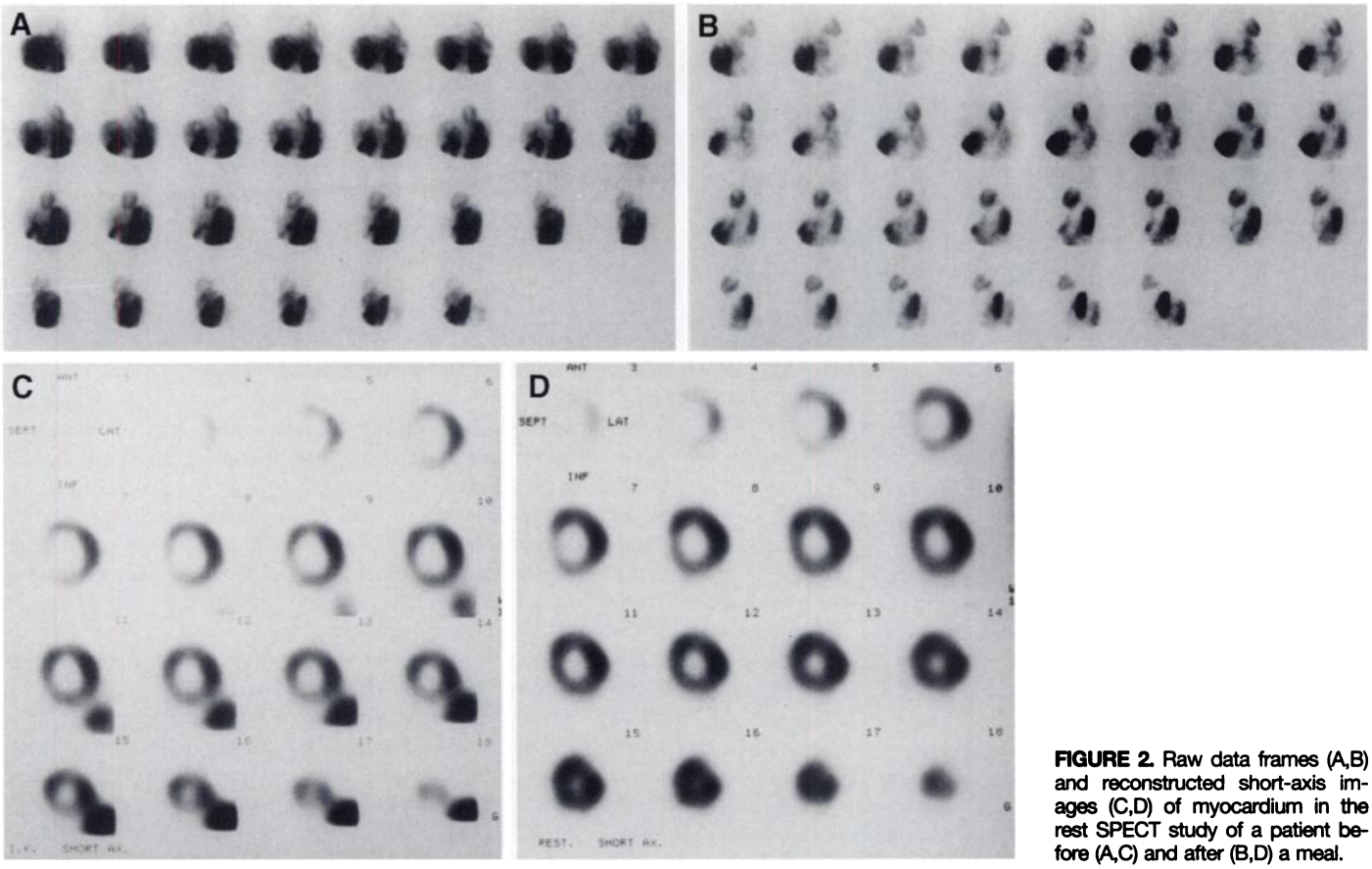

FIGURE 2. Raw data frames (A,B) and reconstructed short-axis images (C,D) of myocardium in the rest SPECT study of a patient before (A,C) and after (B,D) a meal.

10–15 min before imaging. The filled stomach pushes the intestines caudal, removing intestinal activity from the myocardium (Fig. 1). A full stomach between myocardial and intestinal activity prevents scatter to the inferior wall of the myocardium (Fig. 2). This method may also be useful to reduce the additional undesired effect of duodenogastric reflux (*3,4*).

This method provides a high target-to-background ratio for myocardial imaging during a same day stress-rest protocol.

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The Transition from Technegas to Pertechnegas

TO THE EDITOR: The set of experiments described in the article by Scalzetti et al. (*1*) fills an important gap in the published science of technegas and its derivatives and rather neatly demonstrates some of the gas phase chemistry which occurs in the micro-aerosol generator. We performed only a few spot measurements looking for the transition point and worked down from our standard clinical figure of 3% oxygen in large steps.

At an oxygen concentration of 0.101 ± 0.002%, we observed that 57% of the activity existed as pertechnetate. We used thin-layer paper chromatography using methyl ethyl ketone (MEK) as the solvent to separate mobile and nonmobile products.

Inspection of Scalzetti and Gagne's graphical data highlights an important parameter which also affects the technegas/pertechnegas ratio: the operating temperature of the machine.

We have examined the gas phase reaction which leads to the formation of technegas particles and uncovered an operating temperature/technegas yield profile which arises naturally from the mechanism of coating the technetium with graphite to form the micro-aerosol we call technegas. For example, in one set of measurements, the percentage of pertechnegas formed fell from 65% to 3% when the operating temperature of the machine was changed from 2475°C to 2550°C, i.e., an increase of only 75°C.

When the original design parameters for the micro-aerosol generator were set, a temperature of 2500°C was selected as a suitable operating temperature, at least 100°C below that at which the production of high levels of soot becomes significant. Scalzetti and Gagne's data would indicate that their machine might be operating at somewhat lower than the 2500°C, the servo response on the built-in optical pyrometer may not have been correct, and thus they could be generating a base level of pertechnegas caused by incomplete coating of the radionuclide by carbon.

Pertechnegas arose originally from the discovery of a wrongly labeled argon bottle being used in a micro-aerosol generator. The reproducibility of this phenomenon was tested with controlled oxygen loadings of argon gas cylinders at 2% and 5% (the original contaminated bottle was 3%), and then the Prince of Wales Hospital in Sydney was approached to test pertechnegas as an agent for examining the integrity of the alveolar-capillary membrane (*2*).

It was Mackey from that hospital who first coined the term pertechnegas to underline its pertechnetate properties in vivo, in contra distinction to its parent product technegas, which remains static in the lung once inhaled.

ACKNOWLEDGMENT

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Normal Glucose Uptake by Tongue and Pharyngeal Muscles in FDG-PET Imaging

TO THE EDITOR: In the article by Lauenbacher et al. (*1*), Figure 2 shows a PET scan of the head and neck in a patient with squamous-cell cancer of the oropharynx. The sagittal image is similar to an image we recently obtained in a patient without malignancy (Fig. 1). The study showed intense glucose uptake in the tongue, salivary glands and facial muscles. The patient, unknown to us at the time, chewed gum while waiting to be scanned. There can be considerable normal glucose uptake in the tongue, pharyngeal muscles and larynx when patients continue to talk after an injection of FDG. This physiologic activity can be problematic when looking for signs of malignancy. Since that time, we have not only restricted gum but have also requested patients to refrain from talking, drinking water or coughing for 30 min after the FDG injection. The result is a marked decrease in glucose uptake by the tongue and other structures (Fig. 2).

Lauenbacher et al. do not mention whether the patients in their study were instructed not to talk, chew, drink or cough. It would be interesting to know the authors' observations in patients who continue to talk after injection of FDG. I suspect most patients are not advised that "silence is golden."

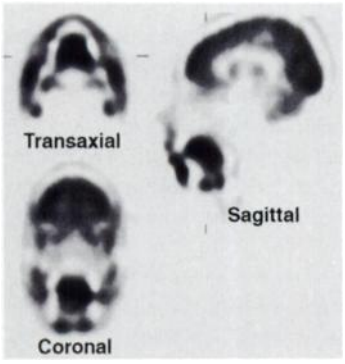

FIGURE 1. FDG-PET scan in a 38-yr-old man with a benign pulmonary nodule. There is high glucose uptake in the tongue, salivary glands and facial muscles due to chewing gum after the FDG injection.

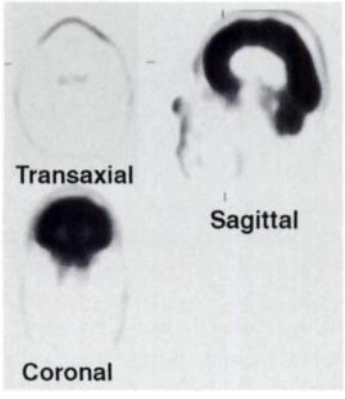

FIGURE 2. FDG-PET scan in a 66-yr-old man with persistent hoarseness and edematous larynx but negative biopsies for malignancy. The patient was instructed to remain silent for 30 min after FDG injection. Little glucose activity is seen in the tongue or other organs.

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REPLY: As demonstrated by Jabour and colleagues (*1*) and in our article (*2*), FDG accumulation in normal mucosa, the tongue, salivary glands and facial muscles is a common finding. The intensity of this accumulation may be influenced by chewing gum, coughing or drinking water, as stated by Segall in his letter. Segall emphasizes that we did not mention whether our patients were instructed not to talk, chew, drink or cough. Since we performed dynamic imaging with prior transmission scanning, our patients were requested to minimize head motion, including no talking, drinking or chewing. Nevertheless, we noticed relatively high ^{18}F activity in various structures of the naso- and oropharynx.

Since T-staging of head and neck tumors and, therefore, the choice of therapy are based on morphological information, the nonspecific ^{18}F activity, which blurred the borders of the tumor, was responsible for the overstaging in our patient population. Thus, T-staging of head and neck tumors will remain in the realm of morphologic techniques, including endoscopy, x-ray computed tomography and magnetic resonance tomography.

However, the main diagnostic problem in these patients is the accurate detection of involved lymph nodes or neck sides. For this indication, the nonspecific FDG accumulation in the naso- and oropharynx did not affect the diagnostic accuracy, resulting in a negative predictive value (NPV) of 98% for individual lymph nodes and an NPV of 89% for involved neck sides.

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Septal Metabolic Mismatch in LBBB

TO THE EDITOR: I was very interested to read the report of metabolic mismatch of septal beta-oxidation and glucose utilization in left bundle branch block assessed with PET by Altehoefer et al. (*1*). Their finding is entirely consistent with results of the cited experimental study of Ono et al. (*2*). Fluorine-18-FDG uptake is a widely held standard of myocardial viability. If left bundle branch block poses an exception to its application, then the mechanism underlying this mismatch is essential to our understanding (and acceptance of this use) of FDG.

Altehoefer et al. commented that "the impaired septal [^{18}F]FDG uptake observed in our patient does not appear to have been caused by reduced substrate demand." Lack of evidence is not proof. In our study of patients with left bundle branch block using ^{201}Tl, we hypothesized that decreased perfusion of the interventricular septum occurs during exercise due to asynchrony of left ventricular contraction, so that (at least) in early systole, the septum generates sufficient tension to overcome only right ventricular