Bone metastases and lung cancer recurrence on ^{99m}Tc-depreotide imaging

To the Editor: We read with interest the recent paper by Sobic-Saranovic D. et al (2008) entitled "Assessment of non-small cell lung cancer viability and necrosis with three radiopharmaceuticals" [1]. The authors concluded that ^{99m}Tc-sestamibi and ^{201}Tl scintigraphy are superior to radio-immunoscintigraphy for detecting non-small primary lung cancer and they are potential, clinically useful methods for the detection of bone and soft tissue metastases.

In addition to the radiopharmaceuticals mentioned above, lung cancer scintigraphy also includes somatostatin receptor imaging with ^{111}In-octreotide and recently ^{99m}Tc-depreotide (^{99m}Tc-D). At this point we would like to refer to our experience on a 56 years old male patient with non-small cell lung carcinoma (NSCLC) treated with right pneumonectomy in whom ^{99m}Tc-D was helpful in diagnosing recurrence of lung cancer and bone metastases and subsequently changed the course of treatment. This patient underwent computed tomography (CT) one year post-surgery, which showed equivocal findings in the area of the right bronchus stump. Single photon emission tomography images with ^{99m}Tc-D detected recurrence In addition, whole-body imaging revealed disseminated metastatic bone disease (Fig. 1). Bone metastases were confirmed by the ^{99m}Tc-methyl diphosphonate (^{99m}Tc-MDP) scan (Fig. 2).

Somatostatin receptors are expressed by small and non-small cell lung cancer [2, 3]. ^{99m}Tc-D, a somatostatin analog with a high affinity for the receptor subtypes 2, 3, and 5, has been used for the differentiation of indeterminate lung nodules. Although the results are encouraging, it is mainly recommended for institutions having no positron emission tomography (PET) facilities [4]. Furthermore, ^{99m}Tc-D is clinically useful in the assessment of regional lymph node involvement in patients with lung cancer and in direct comparative studies as it shows a diagnostic accuracy similar to fluorine-18 fluoro-deoxyglucose (^{18}F-FDG PET) [5] and to CT [6]. ^{99m}Tc-D scintigraphy also provides whole-body imaging and may be helpful for the detection of bone metastases in lung cancer patients [7, 8]. Despite radical treatment, the overall 5-year survival rate for patients with NSCLC, remains low. Progression of the disease is common and may occur either as intrathoracic recurrences or as metastases [9]. Differentiation of recurrent lung cancer from post-therapeutic changes, such as

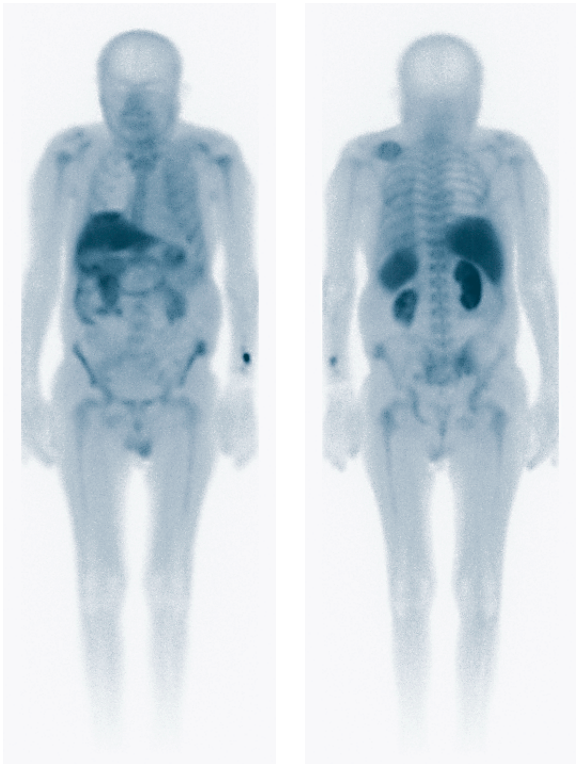

Figure 1. ^{99m}Tc-D anterior and posterior whole-body scans show areas of increased radiotracer uptake in the left scapula, left iliac crest, right ischial tuberosity, as well as a cold area in the left posterior superior iliac spine. Photopenia is noted in the right hemithorax because of previous pneumonectomy.

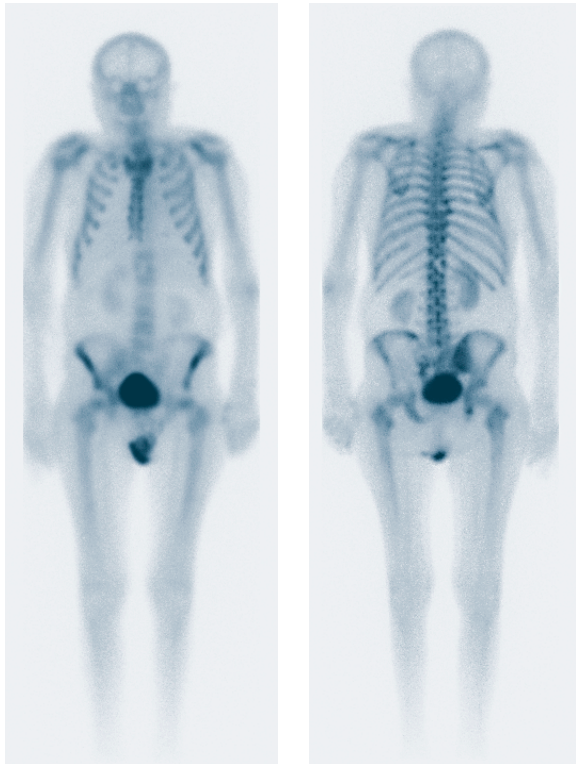

Figure 2. ^{99m}Tc-MDP anterior and posterior whole-body scans show focal increased uptake in the same regions. Moreover, the bone scan demonstrates photopenic areas in the T_7, T_{12} thoracic vertebrae and in the left 10th posterior rib.

from radiation treatment or from previous surgery, still remains a problem for radiological imaging [10]. Therefore, functional imaging with ^{99m}Tc-D as a complementary modality to other radiological studies could be encouraged for the postoperative assessment of lung cancer. However, published data are limited to a single case report [8]. Thus, the question whether ^{99m}Tc-D could be clinically useful in the secondary management of lung cancer, remains.

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Author's reply: We are pleased that Dr G. Meristoudis et al (2008) [1] read with interest our paper published in the *Hell J Nucl Med* 2008;11:16-20 [2]. Although their comments are indirectly related to our results, we would like to add our experience with somatostatin receptor imaging, in the diagnosis of primary, metastatic lung cancer and neuroendocrine tumors.

Since 2006 we have performed more than 200 whole-body and SPET studies with three different somatostatin analogue radiopharmaceuticals: ^{99m}Tc-tektrotyd, ^{111}In-pentatreotide and recently ^{99m}Tc-depreotide. Regarding lung pathology, our results indicate that somatostatin receptor scintigraphy can be useful in the preoperative management of patients with non small cell lung cancer (NSCLC) such as squamous cell carcinoma and adenocarcinoma. Our results are in agreement with the experience of Dr G. Meristoudis et al (2008) and Mena et al (2004) that whole body somatostatin receptor scintigraphy can support the diagnosis of distant metastases of NSCLC [1, 2]. However, we have no experience of the use of somatostatin receptor scintigraphy in the postoperative diagnosis of NSCLC and in the evaluation of progression of the disease.

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