

The role of technetium Tc99m-tetrofosmin as head and neck tumor-seeking agent: a preliminary report

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ABSTRACT

Aim: To evaluate the diagnostic value of technetium Tc99m-tetrofosmin (^{99m}Tc-TF) in primary cancers of the head and neck. **Methods:** Single photon emission computer tomography with planar imaging of the neck for primary site evaluation and whole body scanning for assessment of metastases in 12 patients with newly diagnosed head and neck cancer. Tumor-to-background index (T/Bg) was derived in patients with positive findings (tumor or lymph nodes). **Results:** The tomographic images showed increased tracer uptake in pathological sites (primary tumor or lymph node) in 9 patients (overall sensitivity 75%). Primary tumor was visualised in 7 patients (sensitivity 58%) and infiltrated lymph nodes in 4 out of 7 patients (sensitivity 57%). Mean values for T/Bg index were 5.44 ± 1.28 for primary tumor and 4.25 ± 1.67 for lymph nodes. Mean values for T/Bg index were 4.5 ± 0.71 for patients with *in situ* and grade I carcinoma and 6.68 ± 0.36 for patients with tumor grade II and III ($P = 0.034$, Mann-Whitney *U* test). **Conclusion:** The present study demonstrates that ^{99m}Tc-TF is a valuable radiotracer for head and neck cancer imaging. To determine the potential role of this imaging protocol in clinical practice will require a larger sample size.

Key words: Head and neck cancer; radionuclide imaging; single photon emission computer tomography; ^{99m}Technetium-tetrofosmin

INTRODUCTION

Malignant tumors of the head and neck are among the six most common forms of tumors in the body. Head and neck cancer include neoplasms of the upper respiratory tract (nasopharynx, oropharynx, larynx) salivary glands, and soft tissue of the neck with squamous cell carcinoma being the most frequent histological type. Diagnosis of this type of cancer is based on endoscopy and biopsy of the suspicious lesion.^[1] Staging and evaluation of the extent of disease involves the use of computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET).^[2] Follow-up evaluations after surgery and/or radiotherapy and differential diagnosis of disease relapse from radiation necrosis is more difficult to assess,

due to extensive distortion of the normal anatomy, and may require a combination of different imaging tests,^[3-7] such as PET scan.^[8-11] However, its availability is limited by the need for a cyclotron that produces ¹⁸Fluorodeoxyglucose (¹⁸FDG) and its increased cost. In addition, in many countries, PET is not widely available so other methods are needed for tumor-imaging assessment.

When a PET scanner is not available, nuclear medicine still plays a crucial role in the initial staging of the disease and for follow ups. Lymph node cancerous involvement at initial presentation may be difficult to assess by conventional

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¹⁸F-DG PET/CT) to establish a role for ^{99m}Tc-TF SPECT in therapy, as well as prognosis of head and neck cancers.

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Conflicts of interest

There are no conflicts of interest.

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