Technetium-99m Methoxyisobutylisonitrile Imaging in the Follow-up of Differentiated Thyroid Carcinoma

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Abstract

***Objective**: To evaluate the potential of technetium-99m methoxyisobutylisonitrile (Tc-99m MIBI) imaging as an alternative to I-131 total-body scan (I-131 TBS) for the follow-up of patients with differentiated thyroid carcinoma (DTC). **Patients and Methods**: We performed 87 Tc-99m MIBI imaging studies in 76 DTC patients who had total or near-total thyroidectomy followed by a radioactive iodine ablation while receiving thyroxine therapy. The final diagnosis was correlated with I-131 TBS, serum thyroglobulin (Tg), other conventional imaging modalities, clinical outcome, and/or pathological report. **Results**: Seventy-six recurrent tumours or metastatic conditions in 58 DTC patients were detected. The overall findings of Tc-99m MIBI showed 72% sensitivity, 100% specificity and 77% accuracy. The figures for I-131 scan were 57%, 100% and 66%, respectively. When classifying upon tumour locations, Tc-99m MIBI imaging had sensitivity of 79% for cervical, 50% for mediastinal, 65% for skeletal and 69% for pulmonary metastases and the corresponding values for I-131 TBS were 33%, 67%, 94% and 75%, respectively. Furthermore, Tc-99m MIBI could detect only 44% of thyroid remnants demonstrated by radioiodine scan. **Conclusions**: Tc-99m MIBI imaging is more sensitive than I-131 TBS in detecting tumours in the neck but less sensitive for metastasis elsewhere, as well as thyroid remnants. Therefore, Tc-99m MIBI imaging should not substitute but rather complement I-131 TBS for evaluation of DTC patients post-radioiodine ablation.*

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