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Pre-Operative Prediction of Cervical Nodal Metastasis in Papillary Thyroid Cancer by 99mTc-MIBI SPECT/CT; A Pilot Study

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Abstract

Objective: Papillary thyroid cancer has a high prevalence of cervical nodal metastasis. There is no "gold standard" imaging for pre-operative diagnosis. The aim of the present study was to assess the accuracy of pre-operative 99mTc-MIBI SPECT/CT in diagnosis of cervical nodal metastasis in patients with papillary thyroid cancer.

Material and Method: Fifteen patients were performed 99mTc-MIBI SPECT/CT pre-operatively. Either positive pathological report of neck dissection or positive post-treatment I-131 whole body scan with SPECT/CT of neck was concluded for definite neck metastasis. The PPV, NPV, and accuracy of 99mTc-MIBI SPECT/CT were analyzed.

Results: The PPV, NPV, and accuracy were 80%, 88.89%, and 85.71%, respectively. 99mTc-MIBI SPECT/CT could localize the abnormal lymph nodes groups correctly in most cases when compared with pathological results. However, the authors found one false positive case with caseating granulomatous lymphadenitis and one false negative case with positive post-treatment I-131 whole body scan with SPECT/CT of neck on cervical nodes zone II and IV.

Conclusion: 99mTc-MIBI SPECT/CT seem promising for pre-operative staging of cervical nodal involvement in patients with papillary thyroid cancer without the need of using iodinated contrast that may complicate subsequence I-131 treatment. However, false positive result in granulomatous inflammatory nodes should be aware of, especially in endemic areas. 99mTc-MIBI SPECT/CT scan shows a good result when compared with previous study of CT or MRI imaging. The comparative study between different imaging modality and the extension of neck dissection according to MIBI result seems interesting.

Keywords: Papillary thyroid carcinoma, Technetium Tc 99m Sestambi, SPECT/CT, Lymphadenectomy, Metastasis

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