

Thallium-201 SPECT with triple-headed gamma camera for differential diagnosis of small pulmonary nodular lesion 20 mm in diameter or smaller

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[Aim] Although thallium-201 (^{201}Tl) has been used for the diagnosis of lung cancer, its detectability of small pulmonary nodules is not known. The aim of this study was to evaluate the ability of ^{201}Tl SPECT for the differential diagnosis for the pulmonary nodules 20 mm in diameter or smaller. *[Methods]* ^{201}Tl SPECT was performed in 31 patients suspected of having primary lung cancer. The final diagnosis was established by histology, and tumor size was 10 to 20 mm in diameter. Twenty of 31 patients had malignant tumors, including squamous cell lung cancer (n = 5), adenocarcinoma (n = 14) and small cell lung cancer (n = 1), but in none of them was there mediastinal lymphnode involvement. *[Results]* Ten of 20 malignant tumors and 1 of 11 benign lesions demonstrated significant ^{201}Tl uptake, so that the positive predictive value, negative predictive value, sensitivity and specificity for the diagnosis of lung cancer were 90.9% (10/11), 50.0% (10/20), 50.0% (10/20) and 90.9% (10/11), respectively. *[Conclusion]* These data suggest that sensitivity for detecting lung cancer 20 mm or less in diameter may be insufficient, but even in patients with small pulmonary nodules, a positive ^{201}Tl result is highly predictive of lung cancer.

Key words: thallium-201, single photon emission computed tomography (SPECT), small pulmonary nodule, lung cancer