Application of technetium-\(^{99}\)m-sestamibi in differentiation of active from inactive pulmonary tuberculosis using a single photon emission computed tomography method

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Abstract
Objective We studied the usefulness of \(^{99}\)m Tc methoxyisobutylisonitrile (MIBI) scintigraphy for differentiation between active and inactive pulmonary tuberculosis. Methods Thirty-six patients (aged 39 \pm 8 years, 17 males and 21 females) were included in our study. Each patient was injected with \(^{99}\)m Tc-MIBI and both planar and single photon emission computed tomography (SPECT) imaging were performed 12 and 1 min after injection. Twenty-four patients had active pulmonary tuberculosis (proven by sputum culture), and the remainder had negative sputum culture. Semiquantitative as well as visual assessments were done on all sets of images. Results All of the 17 patients in the control group had negative scintigraphy on both planar and SPECT images. Twenty patients with active pulmonary tuberculosis had positive \(^{99}\)m Tc-MIBI scintigraphy on planar images (sensitivity of 85.0\%). SPECT images were positive in 17 patients with active pulmonary tuberculosis (sensitivity of 95.2\%). Both semiquantitative and visual assessment of planar and SPECT images showed statistically significant differences between active and inactive pulmonary tuberculosis patients (\(P < 0.001\)). Comparison of 12 and 1 min image sets did not show any statistically significant difference (\(P = 0.050\) and \(P = 0.220\) for planar and SPECT images, respectively). Conclusion \(^{99}\)m Tc-MIBI has significant uptake in the active tuberculosis lesions and can be used to differentiate between active and inactive tuberculosis. The SPECT method is especially useful because of its higher sensitivity. Nucl Med Commun 22:799-804 © 2008 Wolters Kluwer Health Lippincott Williams & Wilkins.

Reaxys Database Information

Author keywords
\(^{99}\)m Tc-methoxyisobutylisonitrile; Pulmonary tuberculosis; Single photon emission computed tomography

Indexed Keywords

EMTREE drug terms: methoxyisobutylisonitrile technetium tc \(^{99}\)m; diagnostic agent; radiopharmaceutical agent

EMTREE medical terms: adult; aged; article; clinical article; diagnostic accuracy; diagnostic value; differential diagnosis; disease activity; female; human; lung tuberculosis; male; quantitative analysis; sensitivity analysis; single photon emission computer tomography; sputum culture; statistical significance; middle aged; scintiscanning

MeSH: Adult; Aged; Aged, \(^{\geq}\) and over; Diagnosis, Differential; Female; Humans; Male; Middle Aged; Radiopharmaceuticals; Technetium Tc \(^{99}\)m Sestamibi; Tomography, Emission-Computed, Single-Photon; Tuberculosis, Pulmonary

Medline is the source for the MeSH terms of this document.

Chemicals and CAS Registry Numbers: methoxy isobutyl isonitrile technetium tc \(^{99}\)m, 1.9801-77-2; Technetium Tc \(^{99}\)m Sestamibi, 1.9801-74-9

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