

Usefulness of technetium-99m hexamethylpropylene amine oxime lung scan to detect inhalation lung injury of patients with pulmonary symptoms/signs but negative chest radiograph and pulmonary function test findings after a fire accident—a preliminary report

Yu-Chien SHIAU,* Feng-Yuan LIU,* Jeffrey J.P. TSAI,** Jhi-Joung WANG,***
Shung-Tai HO**** and Albert KAO*****

*Department of Nuclear Medicine, Far Eastern Memorial Hospital, Taipei;

**Graduate Institute of Bioinformatics, Taichung Healthcare and Management University, Taichung;

***Department of Medical Research, Chi-Mei Medical Center, Tainan;

****School of Medicine, National Defense Medical Center, Taipei;

*****Department of Medical Research, China Medical University Hospital, Taichung; Taiwan

Objective: In this study, we employed technetium-99m hexamethylpropylene amine oxime (^{99m}Tc HMPAO) lung scan to detect inhalation lung injury of patients after a fire accident. **Methods:** Ten healthy men for controls and 10 male patients with pulmonary symptoms/signs from a fire accident were enrolled in this study for comparison. ^{99m}Tc HMPAO lung scan was performed in each control and patient, as well as the degree of pulmonary vascular endothelium damage was represented as lung/liver uptake ratios (L/L ratio). All of the controls and patients had no smoking histories. None of the controls and patients had positive findings of plain chest radiograph (CXR) and pulmonary function test (PFT). **Results:** The results showed that significantly higher L/L ratio in the 10 patients (0.53 ± 0.07) than in the 10 controls (0.30 ± 0.07) (the p value < 0.05). Using a cut-off value of 0.40, all of the 10 patients had abnormally increased L/L ratios. **Conclusions:** We conclude that ^{99m}Tc HMPAO lung scan has the potential to be a sensitive, objective and noninvasive method to detect inhalation lung injury of patients with pulmonary symptoms/signs but negative CXR and PFT findings after a fire accident.

Key words: technetium-99m hexamethylpropylene amine oxime, inhalation lung injury, fire accident