Summary

Improvement of $^{99m}$Tc-Pyrophosphate Scintigraphy in Detection of Acute Myocardial Infarction: Combined with $^{99m}$Tc-Tetrofosmin

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[Background] $^{201}$Tl and $^{99m}$Tc-pyrophosphate (PYP) dual scintigraphy is daily used in the detection of acute myocardial infarction (AMI). However, $^{201}$Tl is not available on emergent situation. We proposed a new method for detection of AMI combined $^{99m}$Tc-PYP with $^{99m}$Tc-tetrofosmin (TF). [Methods] $^{99m}$Tc-PYP (740 MBq) was administered to 25 patients with AMI, and 3.5 hours later, planar imaging (PYP planar) and SPECT were performed (PYP-SPECT). Immediately after cessation of PYP-SPECT, $^{99m}$Tc-TF (370–740 MBq) was injected and 5 minutes later SPECT was performed in the same position (TF-SPECT). PYP-SPECT and TF-SPECT were reconstructed in the same geometric status to permit superimpose of PYP-SPECT and TF-SPECT images. Two experts and 2 beginners of nuclear medicine physician interpreted the images in three ways; PYP planar image only, PYP-SPECT, and PYP-SPECT with TF-SPECT. [Results] PYP-SPECT combined with TF-SPECT shows 100% detectability of the AMI lesions, which is significantly higher than other two methods in both experts and beginners. [Conclusion] PYP-SPECT combined with TF-SPECT is a powerful method for detection of AMI.

Key words: Acute myocardial infarction, $^{99m}$Tc-pyrophosphate, $^{99m}$Tc-tetrofosmin, SPECT, Detectability.