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Copper-62 ATSM as a hypoxic tissue tracer in myocardial ischemia

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Copper-62 labeled diacetyl-bis(N^4-methylthiosemicarbazone) (^{62}Cu-ATSM) has been proposed as a generator produced positron-emitting tracer for hypoxic tissue imaging. To clarify the usefulness of ^{62}Cu-ATSM for myocardial ischemia, ^{62}Cu-ATSM PET was performed in 7 patients with coronary artery disease. Increased myocardial uptake of ^{62}Cu-ATSM was observed (myocardium/blood ratio: 3.09) in one patient with unstable angina, who had increased ^{18}F-fluorodeoxyglucose (^{18}F-FDG) uptake under the fasting condition. The other 6 patients, who were clinically stable, did not have increased ^{62}Cu-ATSM uptake, although abnormal ^{18}F-FDG uptake was seen in 4 patients. This preliminary study suggests that ^{62}Cu-ATSM is a promising PET tracer for hypoxic imaging in acute ischemia.

Key words: copper-62 ATSM, hypoxia, coronary artery disease, fluorine-18 FDG, PET