

New design of N-isopropyl-p-[¹²³I]iodoamphetamine (¹²³I-IMP) lung imaging in the patient with lung cancer

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N-isopropyl-p-[¹²³I]iodoamphetamine (¹²³I-IMP) was injected intravenously into primary non small cell lung carcinoma patients (n = 17). The average pixel count ratios of the cancerous area to the whole lung was measured in the initial and delayed images. In the initial image, this ratio was less than 1.0 for the entire group of patients, and was thought to reflect decreased blood flow in the cancerous tissues. The rate of counts within a ROI in the delayed image to counts in the same ROI in the initial image was also calculated and called the remain rate. The remain rate (delayed count/initial count) was significantly higher in the cancerous area than in the whole lung (0.65 ± 0.30 , median 0.62, 0.38 ± 0.05 , median 0.38, $p < 0.01$). This observation was thought to be due to a relative decrease in the blood flow and the accumulation of IMP, which forms pools within the alveolar spaces of the cancerous areas. The image prepared with the remain rate revealed a hot image in the cancerous regions, even when this was not apparent in the delayed image. The remain rate image may therefore be useful in the identification of cancerous areas in lung tissue if it is used in comparison with the initial image.

Key words: N-isopropyl-p-[¹²³I]iodoamphetamine (¹²³I-IMP), lung cancer, IMP lung imaging, IMP receptor