

The usefulness of ^{18}F -FDG PET images obtained 2 hours after intravenous injection in liver tumor

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Liver tumors, especially hepatocellular carcinomas (HCCs), often exhibit no contrast with surrounding non-tumorous liver tissue in F-18-fluoro-2-deoxy-2-fluoro-D-glucose (FDG) positron emission tomography (PET) images obtained at the usual interval of one hour after intravenous FDG injection. We evaluated the usefulness of FDG PET studies of liver tumors performed 2 hours after intravenous injection. **Methods and Materials:** Fifteen pretherapeutic patients with 33 liver tumors were studied, including 11 patients with 18 HCCs, and 4 patients with 15 metastatic liver tumors (METAs) from 3 colorectal carcinomas and 1 esophageal carcinoma. After transmission scans, emission scans were obtained 45–55 minutes and 115–125 minutes after intravenous injection of 185–370 MBq FDG as early images and delayed FDG PET images, respectively. Visual analysis of early and delayed images was performed, and the FDG uptake in the tumor to that in non-tumorous liver ratio (T/N ratio), the FDG uptake in tumor to that in soft-tissue ratio (T/S ratio) and the FDG uptake in non-tumorous liver to that in soft-tissue ratio (N/S ratio) were calculated for each image. **Results:** In visual analysis, visual improvement seen in images was observed in 6 of 18 HCC lesions and all 15 META lesions. In quantitative analysis, the mean T/S ratio and T/N ratio of HCCs in early images were 4.97 and 1.90, respectively, and those in delayed images were 6.24 and 2.20, respectively. The mean T/S ratio and T/N ratio of METAs in early images were 5.97 and 2.21, respectively, and those in delayed images were 6.99 and 3.80, respectively. The T/S ratio of HCCs and T/S ratio and T/N ratio of METAs were significantly higher in delayed images than in early images. The mean N/S ratios of HCC cases were 2.58 in the early images and 2.57 in the delayed images, but the ratio showed no constant tendency in the images. All N/S ratios of META cases were decreased in delayed images, although the significance of the difference between early and delayed images in N/S ratios was not analyzed because of the small number of cases. **Conclusion:** FDG PET studies performed 2 hours after intravenous injection were useful for clear visualization of liver tumors, especially metastatic liver tumors.

Key words: liver, FDG PET, hepatocellular carcinoma, metastatic liver tumor