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DISTRIBUTION PATTERNS OF CEREBRAL ISCHEMIC LESIONS WITH F-18-FDG AND N-13-AMMONIA.

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Positron emission computed tomography (PCT) by POSITOLOGICA-I was performed to several cases with cerebral ischemic lesions using F-18-fluorodeoxyglucose (FDG) and N-13-ammonia (NH3) as indicators of local glucose utilization and relative perfusion, respectively. Both images of FDG and NH3 in normal volunteer revealed similar distribution patterns. In old infarcted focus about 2 months after onset, both FDG and NH3 images were shown as a defect with clear margin. Watershed area between ACA and MCA had a severe decreased uptake with both FDG and NH3 about one month after onset. Although there is no abnormal changes of right posterior cerebral circulation, thalamic uptake of FDG was decreased and that of NH3 was normal on ipsilateral hemisphere. The lesions increased with N-13 activity appeared positive contrast enhauncement by XCT, though F-18 activity was normal or slightly decreased in the same lesions. From these preliminary result, distribution patterns of FDG and NH3 by means of PCT may be important for estimating the condition of glucose utilization and perfusion in cerebral structure after stroke.

2408

CLINICAL STUDY OF SINGLE PHOTON ECT WITH Ga-67-CITRATE.

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At present, many reports about Single photon ECT with Scinti camera are presented. We performed ECT with Ga-67-citrate and obtained clinical results.

Method

We performed scintigraphy and continuously ECT 48 hr. and 72 hr. after intravenous administration of Ga-67-citrate. The equipments we used are (1) Scinti camera LFOV and revolving chair, (2) rotatory Scinti camera GE-400T and (3) Computer (Informatek Simis III). The data were corrected by mading 32, 40 and 64 frames per revolutions.

Result

We made Ga-scintigraphy for the patients who had malignant tumor or inframatory disease. The patients who had no abnormal findings by mean of common scintigraphy were all normal by ECT. But we can obtain not only plane abnormal accumulation but also solid accumulation from the study of transvers tomography. This method is useful to know a location and a depth of a focus of disease.

2409

GALLIUM IMAGING USING EMISSION COMPUTED TOMOGRAPHY.

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Single photon ECT(SECT) in gallium imaging was clinically evaluated. A SECT system composed of two opposed large-field-of-view gamma camera(GCA-70A-S, Toshiba) was used in this study. Three days after the administration of 2-4 mci of Ga-67 citrate, date for SECT were collected, angular rotation mode 4-6" intervals with frame time of 15-20 sec.; total acqusition time being 8-15 min. Convolution algorithm was used for reconstruction and transaxial, sagittal and coronal sections were made. In this study clinical evaluation was concentrated in the esophageal cancer. SECT images were useful in separating lesion activity from neighboring activities in normal tissues such as sternum, vertebrae, liver or hilus to elevate the confidence level of detection and in visualizing the exact location of the disease in three dimensional field of view. We have devised a special technique to repeat SECT scan with a thin tube filled with Ga-67 citrate solution inserted through the esophagus. By this technique, comparing paired images with and without the tube activity, exact location relative to esophagus or extraesophageal extension of the disease was easily evaluated. SECT imaging was slso useful in estimating the effect of treatment by the decrease in Ga-67 concentration.

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TUMOR IMAGING BY EMISSION TOMOGRAPHY USING GALLIUM-67.

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A whole body single photon ECT system was used to investigate clinical usefulness of gallium-67 imaging for diagnosis of malignant tumor. Two opposed gamma cameras which are supported by a gantry rotate about the axisis of the patient and the data are acquired. A hundred and three patients with malignant tumors or similar diseases were performed gallium ECT following conventional anterior and posterior imagings. Transaxial reconstructions corresponding to 16.4 mm were made and displayed on CRT.

The transaxial images sometimes demonstrate tumor localizations more clearly than standard images. In several cases, ECT image discovered involved sites that conventional scintigrams or roentgenograms failed to visualize. An attempt to overlap the contour which had been extracted from XCT data on ECT image was made. This method led us to more accurate recognition of tumor localization and extension.