## 1192

AN EXPERIMENTAL STUDY FOR THE THERAPEUTIC EVALUATION OF TUMORS USING TL-201 SCINTIGRAPHY. K. Fukunaga, Y. Nishiyama, H. Takashima, M. Ohkawa, M. Tanabe. Kagawa Medical School, Kagawa, Japan

The purpose of this study was to investigate the correlation between histopathological changes and Tl-201 accumulation after chemotherapy and radiotherapy. Walker 256 carcinomas implanted in rats were treated with chemotherapy and by radiotherapy. Tl-201 scintigraphy was performed before and after the respective therapy. Count ratio of the tumor to the normal muscle (T/N ratio) was measured. Tumor growth rate was measured and autoradiography and histopathological examination were performed. In each group, tumors disappeared within 2 weeks. T/N ratio was decreased after radiotherapy but did not change after chemotherapy. Histopathological findings showed massive necrosis in the radiotherapy group and a small necrosis and a remarkable lymphocyte infiltration in the chemotherapy group. These results suggest that: 1)Tl-201 accumulation may reflect the degree of the necrosis during the therapeutic process; and 2)the reason why T/N ratio did not decrease after chemotherapy was the accumulation of Tl-201 in lymphocytes.

## 1194

THREE-DIMENSIONAL DATA ACQUISITION AND IMAGING FOR WHOLE-BODY PET SCANNING TO REDUCE INJECTION DOSE OF RADIOISOTOPES. T. Fujiwara, S. Watanuki, M. Itoh, K. Ishii, H. Orihara, S. Takahashi, K. Kitamura. CYRIC, Tohoku University, Sendai, Japan, and Shimadzu Corporation, Kyoto, Japan.

PET study of tumor imaging has made important contributions in clinical oncology. Whole-body PET scanning is undergone to detect primary cancer and metastatic lesion by multislice PET scanner. Although the spatial resolution in modern PET is improved by reducing the crystal size, the sensitivity of PET scanning with interplane septa is limited and a substantial activity of radioisotope is necessary. In order to raise the sensitivity, three-dimensional data acquisition (3D) without interplane septa was proposed in brain PET study. We applied this technique for whole-body scanning and found that even one mCi of FDG was enough to visualize the distribution of radioisotope in the body. Even though the current 3D PET is not sufficient for absolute quantitation of distribution of radiopharmaceuticals, it may be a valuable tool in cost effective early cancer detection with smaller absorbed dose of subject.

## 1197

Evaluation of TPA-M Daiichi Kit as a Immunoradiometric assay for Measurement of Serum Tissue Polypeptide Antigen H. Kitani, M. Murakami, Y. Taruoka, S. Kanou, A. Hamase, M. Maeda and M. Fukuchi. Department of Nuclear Medicine, Hyogo College of Medicine, Nishinomiya, Hyogo.

We evaluated the usefulness of the TPA-M Daiichi kit as a IRMA utilizes monoclonal antibody specific for serum tissue polypeptide antigen (TPA).
This IRMA was found to be highly sensitive to serum TPA; minimum detectable concentration of TPA was 12.5 U/L. There were no problems in the interassay and intraassay reproducibility and recovery test. The antigen measured by this IRMA was immunologically similar to TPA Daiichi II kit (r=0.970, y=1.25x - 38.28). In addition, correlation to the TPS(BEKI) and CYFRA(TFB) concentrations were showed with r=0.637 and 0.788, respectively. Thirty-nine out of 100 patients with benign diseases (39.0%) and 157 out of 203 patients with malignant diseases (77.3%) showed a serum concentration over cut-off value of 70 U/L. Thus, our findings suggested that this IRMA kit is a useful radioassay system for serum TPA as a tumor marker.

## 1202

**Effects of blood specific gravity on quantification errors of RI-labeled blood samples**

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This study was designed to examine the effects of blood specific gravity associated with red blood cell (RBC) sedimentation on calculated radioactivity values in RI-labeled blood samples. RBCs and human serum albumin (HSA) were labeled with $^{99m}$Tc and the $^{99m}$Tc activity of the blood samples were measured in a well counter. Both 2 ml-and 4 ml-blood $^{99m}$Tc-RBC and $^{99m}$Tc-HSA samples were allowed to stand in the well counter. Calculated radioactivity values were plotted against time on a graph. The size of the errors in the calculated values over time was more marked with $^{99m}$Tc-RBC labeling than with $^{99m}$Tc-HSA labeling. It became noticeable after 4 ml-serum samples were allowed to stand for 10 min and reached 7% at 30 min and 19% at 60 min. When 4ml-blood samples were shaken before measurement, the errors were almost constant and within 1%. In conclusion, the size of the errors in the calculated radioactivity values was proportional to the length of standing of blood samples in the well counter and appeared to be affected by blood volume, hematocrit, viscosity, and RBC specific gravity. In addition, the errors positively increased with $^{99m}$Tc-RBS labeling and negatively increased with $^{99m}$Tc-HSA labeling.