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DIAGNOSIS OF OVARIAN TUMOR AND CERVICAL CARCINOMA BY COMBINED USE OF ULTRASONOGRAPHY (USG), X-RAY CT AND EMISSION CT (ECT). Y. Maeda, Y. Tanaka, S. Okamura, Y. Okamoto, M. Ueki, O. Sugimoto and H. Akagi. Osaka Medical College. Takatsuki.

We have evaluated the combined use of USG, X-CT and Ga-67-computed scintigraphy as a diagnostic method for ovarian tumors. In order to obtain a more accurate diagnosis, a new method of comparing USG, X-CT and Ga-C.S. on the same plane was evaluated.

First the tomographic axes of USG and X-CT were changed using a three-dimensional reconstruction method, and then ECT was tried after conventional Ga-C.S.. Comparison of the images produced by USG, X-CT and ECT on the same plane can best be achieved from horizontal sections at present. The clinical usefulness of this method in the diagnosis of ovarian tumor and cervical carcinoma was evaluated.

Forty-three ovarian tumors which were suspected, from USG screening, to be malignant and 12 cervical carcinomas were examined.

The combined use of USG, X-CT and Ga-C.S. allowed the differentiation between benignancy and malignancy in 93.8% of the cases of ovarian tumor. When ECT was added, the rate of differentiation rose to 95.3%.

In cervical carcinomas, ECT horizontal images well corresponded with the X-CT and/or the USG in such cases as stage III, IV and recurrence, and was useful for the evaluation of infiltration.

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FUNDAMENTAL AND CLINICAL STUDIES OF QUANTITATIVE EVALUATION OF Ga-67 AND Tl-201 SCANS IN PRIMARY LUNG CANCER. T. Togawa, A. Suzuki, K. Kato, Y. Higuchi, K. Kobayashi, K. Nagai, J. Saito and Y. Ito. Fukushima Medical School. Fukushima.

In the previous meeting, we reported Tl-201/Ga-67 uptake ratio as an index of a quantitative method of Ga-67 and Tl-201 scans in primary lung cancer. Here, we performed fundamental studies concerning volume correction using phantoms, and tried to assess whether either Ga-67 uptake or Tl-201 uptake was able to be evaluated respectively and also they were useful indicators. Patients consisted of 24 with primary lung cancer histologically confirmed. In the five values, namely T-N/N, T-N/ND, T-N/ND $\lambda$  of Ga-67 or Tl-201, Tl-201/Ga-67 crude uptake- and -corrected ratio, the latter two were reported already. We assessed what was the most accurate indicator by experiment with phantom. (T: mean count of ROI of tumor. N: mean count of ROI of normal control lung. D: tumor diameter.  $\lambda$ : depth attenuation ratio of counts) In basic study, T-N/ND $\lambda$  of Ga-67 and Tl-201/Ga-67 crude uptake ratios seemed accurate parameters in quantitative evaluation. Although T-N/ND $\lambda$  of Ga-67 was compared with histology, it was not significantly different from cell types. Tl-201/Ga-67 crude uptake ratio was well correlated with histology and was considered as the most useful parameter on quantitative evaluation of Ga-67 and Tl-201 scans in primary lung cancer.

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CLINICAL EVALUATION OF THE THORACIC Ga-67 SCINTIGRAPHY FOR LUNG CANCER AND MALIGNANT LYMPHOMA. S. Kawa, S. Kobayashi, S. Nobeza, C. Fujii, N. Kaneko, I. Hashizume, N. Sato, G. Wada, S. Hanzawa, T. Hasegawa, A. Kobayashi, Y. Tanaka, Hamamatsu Medical Center. Hamamatsu. \*Kansai Medical University. Moriguchi.

Ga-67 is widely used to decide the localization and the effect of treatment for malignant tumors in spite of no definition of its concentration mechanism and the same affinity for inflammation.

There were examined sixty cases, primary lung cancer 44 and malignant lymphoma 16. All cases were studied by XCT at the same time and 25 cases were gained SPECT images.

Primary lung cancer: XCT could't differentiate tumor from atelectasis or pleural effusion, Ga scintigram were effective in 6 cases. Sensitivity of Ga in lung lesion was 84% but only 25% less than 3.0cm in diameter. In detecting mediastinal involvement with ECT in 12 thoracotomy cases, sensitivity and specificity were 33% and 100% respectively. 84% of inoperable cases were in accord with XCT finding. ECT was very effective to differentiate the sternum and the thoracic vertebra, it displayed mediastinal node 10mm in length.

Malignant lymphoma: Ga negative finding in re-study was in well agreement with decreased nodal size in XCT.

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GALLIUM TOMOSINTIGRAPHIC IMAGING OF LUNG CANCER USING EMISSION COMPUTED TOMOGRAPHY (ECT). T. Hattori, K. Takeda, H. Maeda, S. Namikawa and T. Nakagawa. Mie University. Tsu.

Ga-67 ECT imaging was clinically evaluated in 37 cases of primary lung cancer.

ECT data were acquired by an ECT system with rotating dual cameras. Total acquisition time was about 12 to 15 minutes. Attenuation correction was not done in this study.

Tumor uptake was detected in 26 patients (70%) on conventional images. On ECT images, by contrast, it was detected in 31 cases (80%), of which tumor uptake of squamous cell carcinoma and poorly differentiated carcinoma was detected in all regardless of the size. However, that of adenocarcinoma smaller than 3cm in diameter was detected only in 2 out of 7 cases even on ECT images.

Tumor uptake was further quantitatively evaluated by the uptake ratio which was obtained by the ratio of the counts for ROI over the tumor to those over healthy contralateral lung field. Mean tumor uptake ratio in cases with adenocarcinoma was significantly decreased ( $p < 0.05$ ) relative to that in squamous cell carcinoma and poorly differentiated carcinoma.