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EVALUATION OF Tc-99m MIBI TO PREDICT CHEMOTHERAPEUTIC RESPONSE OF PATIENTS WITH SMALL CELL LUNG CARCINOMA Y.Yamamoto, Y.Nishiyama, K.Fukunaga, K.Satoh, H.Takashima, and M.Tanabe. Kagawa Medical School, Kagawa, Japan.

The relationship between Tc-99m MIBI accumulation by the tumor and response to chemotherapy was investigated in 18 patients with small cell lung carcinoma (SCLC). Twelve patients were newly diagnosed and 6 had not responded to chemotherapy previously. The early ratio (ER), delayed ratio (DR) and retention index (RI) were measured by SPECT. Tumors before treatment showed a significantly higher ER than those that did not respond to chemotherapy ($p < 0.05$). In 12 patients investigated before chemotherapy, the tumors were classified into responders and nonresponders by a follow-up CT examination. Responders showed a significantly higher RI than nonresponders ($p < 0.05$). Five of the 12 patients were also studied after chemotherapy. The ER and DR were significantly lower after treatment than before treatment ($p < 0.05$). In conclusion, Tc-99m MIBI SPECT has the potential to predict the response to chemotherapy in SCLC.

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COMPARISON OF Tl-201 AND Ga-67 SCINTIGRAPHY IN THE DIAGNOSIS OF THYMIC TUMORS. T.Ihaya¹⁾, Y.Tanabe, K.Endoh, T.Nishio, and Y.Ohta²⁾

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We performed Tl-201 and Ga-67 scintigraphy on 12 patients with thymic tumors and evaluated the possibility to differentiate thymic tumors. Twelve patients with histologically proven thymic tumors were studied. They were 5 cases of invasive thymoma, 3 cases of non-invasive thymoma, and 4 cases of thymic cancer. They were imaged after twenty minutes following 111 MBq of Tl-201 chloride with a low energy multipurpose collimator. Ga-67 citrate scintigraphy was also performed to compare with Tl-201 scintigraphy. The accumulation of both tracers were judged visually and also tumor-to-normal tissue ratio (TNR) was calculated. Tl-201 scintigraphy more accurately demonstrated the size, location and the extent of lesions than Ga-67 citrate scintigraphy in the cases with thymoma. Five patients with thymic cancer showed less uptake of Tl-201 in the lesions compare to intense uptake of Ga-67 in both primary and metastatic lesions and other imaging studies showed degeneration and/or necrosis in the tumor. The difference on the uptake of both tracers in thymic tumors suggested to reflect the clinical and oncologic behavior.

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Usefulness of TlCl-201 functional SPECT image with a newly designed retention parameter for differentiation of proximal bronchogenic carcinoma from post obstructive lobar collapse. - Compared with Bolus CT -

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It has been difficult to differentiate proximal bronchogenic carcinoma from post obstructive lobar collapse in conventional CT or in conventional TlCl-201 early and delayed SPECT images.

We tried to perform Bolus CT and TlCl-201 functional image for 12 Cases who were proximal bronchogenic carcinoma with lobar collapse. Bolus CT was reported to be useful for diagnosis of these cases. We attempted to make TlCl-201 functional SPECT image with using following formula for each pixel. $[(\text{Delayed uptake ratio}) - (\text{Early uptake ratio})] \times 100\%$. We compared the results of TlCl-201 functional SPECT images and Bolus CT images. 9 out of 12 cases area well differentiated in these two structures using bolus CT images. With the new TlCl-201 functional image, good delineation between these structures were observed in all cases. The significance of performing TlCl-201 functional images in differentiating these two structures in lung cancer is discussed.

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EFFECT OF GLUCOSE-INSULIN INFUSION ON THALLIUM TUMOR IMAGING. Y.Nishiyama, K.Fukunaga, Y.Yamamoto, K.Satoh, H.Takashima, and M.Tanabe. Kagawa Medical School, Kagawa, Japan.

Thallium kinetics, like potassium kinetics, may be affected by insulin. We, therefore, performed an experimental study using insulin to improve the Tl-201 accumulation in the tumor. Results were compared with administration of Tl-201 alone. Walker-256 experimental tumors were implanted in the right thighs of rats. In the first study (Protocol 1), Tl-201 accumulation was evaluated after the simultaneous injection of Tl-201, insulin and glucose. In the second study (Protocol 2), insulin and glucose were administered immediately after the injection of Tl-201. As control, only Tl-201 was administered. Tl-201 counts ratio of the tumor to normal muscle (T/N ratio) was measured by gamma camera. There was an upward tendency of T/N ratio in the order of Protocol 2, Protocol 1 and control. This preliminary study suggests that Tl-201 accumulation in the tumor could be enhanced by insulin.