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EVALUATION OF Tc-99m MIBI TO PREDICT CHEMOTHERAPEUTIC RESPONSE OF PATIENTS WITH SMALL CELL LUNG CARCINOMA

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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.

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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 bronchgenic carcinoma with lobar collapse. Bolus CT was reported to be useful for diagnosis of theses cases.We attempted to make TlCl-201 functional SPECT image with using following formula for each pixel . [(Delayed uptake ratio)-(Early uptake ratio)] X 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.

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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 immediatly 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.