Clinical Experience of $^{67}$Ga-Citrate for Diagnosis of Pulmonary Carcinoma

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In 1969, Edwards and Hayes have reported that $^{67}$Ga-citrate was taken in the affected cervical lymphnodes of a patient with Hodgkin's disease. Since then, $^{67}$Ga-citrate is being watched with interest as a new radioisotope for diagnosis of pulmonary carcinoma. The present report describes about the clinical application of $^{67}$Ga-citrate for diagnosis of pulmonary carcinoma.

The subjects of our study were consisted of ten cases with primary pulmonary carcinoma, each one of metastatic pulmonary carcinoma and malignant lymphoma, each two cases with benign pulmonary tumor and pulmonary abscess, each one of sarcoidosis, pulmonary tuberculosis, pneumoconiosis, and three normal cases.

1.5–2.0 mCi of the $^{67}$Ga-citrate with 200 mg of sodium citrate was individually injected intravenously. Whole body linear scanning and pulmonary scanning were carried out 24 and 48 hours after injection.

The lung scan of ten cases with pulmonary carcinoma which tumors were over three cm in diameter showed definite positive shadow of $^{67}$Ga-citrate in the affected part with carcinoma. However, there were some cases which size of positive shadow of $^{67}$Ga-citrate were smaller than the tumor shadows seen on the chest X-ray film. The autopsy or operation findings of these cases indicated that small deposit shadow of $^{67}$Ga-citrate compared with original tumor shadow of the chest X-ray was brought by diffuse necrosis of the carcinoma lesion. A metastatic pulmonary carcinoma which had several nodular shadows showed only small one deposit of $^{67}$Ga-citrate in the corresponding region to a largest tumor shadow (it's diameter was three cm). A case of lymphosarcoma showed small positive shadow of $^{67}$Ga-citrate in the mediastinal region. Three normal cases showed no deposit of $^{67}$Ga-citrate in the lung fields, and two cases of benign pulmonary tumor also showed negative shadow. All cases of pulmonary tuberculosis, sarcoidosis, pneumoconiosis and pulmonary abscess showed positive shadow of $^{67}$Ga-citrate in their affected regions as pulmonary carcinoma showed.

In summary, it was concluded that positive shadow of $^{67}$Ga-citrate was shown in not only malignant tumor but also inflammatory disease, but $^{67}$Ga-citrate was a recommendable radioisotope for diagnosis of pulmonary carcinoma.

Studies on the Distributions of $^{67}$Ga-Citrate in the Patients with Various Pulmonary Disorders

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The evaluation of $^{67}$Ga-citrate for the diagnosis of pulmonary disorders was studied in comparison with $^{131}$I-MAA including fundamental experiments using tumor bearing Ehr-