

Gallium-67 citrate imaging for the assessment of radiation pneumonitis

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In order to evaluate its usefulness in the assessment of radiation pneumonitis, gallium-67 citrate (^{67}Ga) imaging was performed before and after radiation therapy (RT) on 103 patients with lung cancer. In 23 patients with radiation pneumonitis detected radiographically, abnormal ^{67}Ga uptake in sites other than tumors was found in all post-RT ^{67}Ga lung images. Three patterns of uptake were found: (A), focal uptake corresponding to the RT field ($n=10$); (B), diffuse uptake including the RT field ($n=4$), and (C), diffuse uptake outside the RT field ($n=9$). The area of ^{67}Ga uptake was consistent with that of interstitial pneumonitis as revealed histopathologically in 7 cases. ^{67}Ga uptake in pattern (C) was an indicator of poor prognosis for the patients with radiation pneumonitis. ^{67}Ga uptake in the patients with reversible pneumonitis disappeared with steroid therapy. Sixteen (20%) of 80 asymptomatic patients, in whose chest radiographs there was no finding of radiation pneumonitis, showed transient ^{67}Ga uptake. These were considered to occur in the subclinical radiation pneumonitis. These data suggest that ^{67}Ga imaging is more sensitive than chest radiography in the detection of radiation pneumonitis and is useful in the assessment of the extent and clinical course of radiation pneumonitis.

Key words: Radiation pneumonitis, Gallium imaging, Radiation injury to the lung.