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**Preliminary application of high-definition computed tomographic gemstone spectral imaging in lung cancer**

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**Objectives:** To evaluate the feasibility of multiparameter quantitative measurement lung cancer by Gemstone Spectral Imaging (GSI) high-definition computed tomography.

**Materials and Methods:** Seventy-seven patients who were found to have a lung mass or a nodule by CT plain scan for the first time received chest contrast CT scan with GSI mode on high-definition computed tomography. The GSI viewer was used to display the spectral curve, iodine-based images, water-based images, and 101 sets of monochromatic images of a selected region of interest from the relative homogeneous area of the mass or nodule. Iodine concentration, water concentration, spectral curve slope, and CT values at 40 keV of the region of interest were measured. Finally, 68 eligible patients were divided into a pneumonia group (n = 24) and a malignant tumor group (n = 44, including squamous carcinoma,

n = 29, and adenocarcinoma, n = 15).

**Results:** Significant differences existed in iodine concentration (t = 6.459), spectral curve slope (t = 6.276), and CT values at 40 keV (t = 6.698) between the pneumonia group and the malignant tumor group (P < 0.05), as well as between squamous carcinoma and adenocarcinoma (t = 6.494, 5.634, 6.091, respectively, P < 0.05), whereas water concentrations were found to have no difference between the 2 groups (t = 0.082, P > 0.05) and between the 2 types of malignant tumors (t = 1.234, P > 0.05).

**Conclusions:** High-definition computed tomographic GSI technique might be helpful to differentiate lung cancer from lung benign lesions by providing qualitative and quantitative information.

**Biography**

Guangli Wang the member of the Chinese medical association, the committee member of Molecular Imaging group in Shandong Radiological Society has involved with several research projects, including "Clinical study of molecular imaging in staging of non-small cell lung cancer", "Correlation of Spectral CT imaging with VEGF, MVD and Ki-67 expression in non-small cell lung cancer", "The value of Volume RAD in the diagnosis of thoracic lesions", and "Quantitative Emphysema Assessment of Pulmonary Function Impairment by Computed Tomography in Chronic Obstructive Pulmonary Disease."

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