

Quantitative evaluation in tumor SPECT and the effect of tumor size: Fundamental study with phantom

Takashi TOGAWA, Nobuharu YUI, Fujimi KINOSHITA and Masamichi YANAGISAWA

Division of Nuclear Medicine, Chiba Cancer Center Hospital

An experimental study with phantoms was performed in order to evaluate the effect of the tumor volume on the quantitative estimation in tumor SPECT. The ratio of mean count/pixel in the phantom to that of the background (T/N ratio) was well correlated with the size of the phantom: even when the concentration of the Tc-99m O_4^- solution of globular phantoms with diameters of 29, 37 and 46 mm was constant, the greater the size of the phantom, the higher was the T/N ratio. This study showed that we should understand that the T/N ratio was certainly affected by the reduction of the tumor size itself whenever we evaluate treatment response or assess tumor viability after treatment by reference to the T/N ratio.

Key words: tumor SPECT, partial volume effect, thallium index, T/N ratio