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

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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 O4 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