

The retention indices of ^{201}Tl -SPECT in brain tumors

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Objective: The aim of this study was to assess the utility of ^{201}Tl SPECT in the differential diagnosis of intracranial tumors and to determine the relationship between ^{201}Tl uptake and histological types.

Methods: Thirty-eight patients (19 males and 19 females) with thirty-eight brain tumors were evaluated with ^{201}Tl -SPECT. The early and delayed ^{201}Tl uptake ratio was calculated, and the retention index (RI) was applied as follows; $\text{RI} = \text{delayed uptake ratio/early uptake ratio}$. **Results:**

The RI of malignant tumors was higher (0.72 ± 0.18) than that of benign tumors (0.50 ± 0.16) and the difference was statistically significant ($p = 0.00045$). The difference between high-grade glioma (0.80 ± 0.15) and metastatic tumors (0.64 ± 0.19) was statistically significant ($p = 0.039$).

Conclusion: ^{201}Tl -SPECT may add useful biochemical information and could differentiate malignant brain tumors from benign lesions, but the RI of metastatic tumors varied depending on the organs with the primary lesion and histological types.

Key words: ^{201}Tl -SPECT, retention index, brain tumor, Gd-enhanced MRI