

Characterization of cartilaginous tumors with ^{201}Tl scintigraphy

Takahiro HIGUCHI,^{*,***} Junichi TAKI,^{*} Hisashi SUMIYA,^{*} Seigo KINUYA,^{*} Kenichi NAKAJIMA,^{*}
Masanobu NAMURA^{***} and Norihisa TONAMI^{*}

**Department of Biotracer Medicine, Kanazawa University Graduate School of Medical Sciences
PET Center and *Department of Cardiology, Kanazawa Cardiovascular Hospital*

Histological diagnosis and grading of cartilaginous tumors are closely correlated with patient prognosis; consequently, they are essential elements. We attempted to clarify the characteristics of ^{201}Tl uptake in various histological types of cartilaginous tumors and to assess its clinical value.

Methods: Twenty-two cases with histologically proven cartilaginous tumors (3 enchondromas, 15 conventional chondrosarcomas (grade I = 9, II = 5, III = 1), 3 mesenchymal chondrosarcomas, and 1 de-differentiated chondrosarcoma) were examined retrospectively. Planar ^{201}Tl images were recorded 15 min following intravenous injection of ^{201}Tl (111 MBq). ^{201}Tl uptake in the tumor was evaluated visually employing a five-grade scoring system: 0 = no appreciable uptake, 1 = faint uptake above the background level, 2 = moderate uptake, 3 = intense uptake but lower than heart uptake and 4 = uptake higher than heart uptake. **Results:** ^{201}Tl uptake scores were 0 in 3 of 3 enchondromas, 9 of 9 grade I, and 4 of 5 grade II conventional chondrosarcomas. ^{201}Tl uptake scores were 1 among 1 of 5 grades II and a grade III conventional chondrosarcoma. Mesenchymal chondrosarcoma and de-differentiated chondrosarcoma displayed ^{201}Tl uptake scores of 2 or 3.

Conclusions: Absence of elevated ^{201}Tl uptake in cartilaginous tumors was indicative of enchondroma or low-grade conventional chondrosarcoma. However, in instances in which ^{201}Tl uptake is obvious, high-grade chondrosarcoma or variant types should be considered.

Key words: ^{201}Tl , bone and soft tissue sarcoma, chondrosarcoma