



- Membership
- SNM Publications
- Meetings & Events
- Technologist Section

- Chapters
- Councils
- Governance
- Online Forum

Publication: [Journals & Newsletters](#) [Media](#)

CLINICAL INVESTIGATIONS

Differential Diagnosis of Thymic Tumors Using a Combination of ^{11}C -Methionine PET and FDG PET

Masayuki Sasaki, Yasuo Kuwabara, Yuichi Ichiya, Yuko Akashi, Tsuyoshi Yoshida, Makoto Nakagawa, Sadayuki Murayama and Kouji Masuda

Department of Radiology, Faculty of Medicine, Kyushu University, Fukuoka; and Department of Radiology, National Kyushu Cancer Center, Fukuoka, Japan

We assessed the usefulness of PET studies in making a differential diagnosis of thymic tumors by using ^{11}C -methionine (MET) and ^{18}F -fluorodeoxyglucose (FDG).

Methods: We examined 31 patients with thymic tumors, including 14 patients with thymic cancer, 9 with invasive thymoma, 5 with noninvasive thymoma and 3 with thymic cysts. The histological diagnosis was confirmed by either surgery or biopsy. MET PET and FDG PET were performed in 28 and 29 patients, respectively. Both the MET and FDG uptakes were evaluated by the standardized uptake value (SUV).

Results: MET uptake was not substantially different among thymic cancer (4.8 ± 1.4), invasive thymoma (4.3 ± 1.1) and noninvasive thymoma (4.5 ± 1.2), but MET uptake in thymic cysts (0.9 ± 0.1) was lower than that in the other three tumors ($P < 0.01$). The FDG uptake in thymic cancer (7.2 ± 2.9) was higher than that in invasive thymoma (3.8 ± 1.3), noninvasive thymoma (3.0 ± 1.0) and thymic cysts (0.9) ($P < 0.01$). MET uptake in thymic tumors correlated with the FDG uptake ($r = 0.65$), whereas MET uptake in thymic cancer was lower than FDG uptake (FDG/MET ratio = 1.52 ± 0.52) but was higher than FDG uptake in both invasive and noninvasive thymoma (FDG/MET ratio = 0.86 ± 0.33). To differentiate thymic cancer from thymoma, a receiver operating characteristic (ROC) analysis was performed. The area under the curve of FDG PET was 0.90, whereas the FDG/MET ratio was 0.87.

Conclusion: The MET PET, FDG PET and the FDG/MET ratios were unable to differentiate benign thymic tumors from malignant ones, although FDG PET was considered to be useful in the differential diagnosis between thymic cancer and thymoma. Although the difference in the uptake ratio between FDG and MET suggests a different origin of the tumors, the FDG/MET ratio is not considered to be useful as a complementary method for the differential diagnosis of thymic tumors.

Key Words: mediastinal tumor; thymic cancer; thymoma; ^{11}C -methionine; ^{18}F -fluorodeoxyglucose; PET

J Nucl Med 1999; 40:1595-1601

Received Jul. 20, 1998; revision accepted Mar. 26, 1999.

For correspondence or reprints contact: Masayuki Sasaki, MD, PhD, Department of Radiology, Faculty of Medicine, Kyushu University, 3-1-1 Maidashi, Higashi-ku, Fukuoka 812-8582, Japan.

