and subject to different signal intensity distribution due to the tumor heterogeneity of the magnetic resonance or PET signal. Despite this limitation, the center-of-mass distance was <2 mm, underscoring the accuracy of this method. This is probably due to the fact that the signal distribution of these particular tumors was relatively homogeneous because the tumors were relatively small (from 15 × 15 mm to 40 × 40 mm in diameter as defined by MRI) and the fact that the center of gravity is robust against the heterogeneity effect. Characteristics of these particular tumors do not affect the validity of the coregistration procedure because our method uses the normal structures not the tumors.

The grading system is for semiquantification of visual inspection using primary and metastatic lesions as internal fiducial markers. It is a reasonable approach to consolidate the accuracy of the measurement of each internal fiducial marker by the center-of-gravity distance because the grade was determined by the degree of coregistration of multiple markers. This is particularly useful in the head and neck regions, to which rigid-body assumption cannot be applied.

CONCLUSION

High-resolution PET with multisectional displays depicted normal FDG distribution in the head and neck region, which, in turn, allowed efficient coregistration of PET and MRI.

ACKNOWLEDGMENTS

We thank Masato Tanaka, RT, Department of Radiology, Fukui Medical University and Hideaki Hayashi, Asahi Kasei Joho System Co., Ltd., for assistance with image registration. This study was supported in part by the Research Grant JSPS-RFTF97L00203 for the "Research for the Future" Program from the Japan Society for the Promotion of Science.

REFERENCES

1. Laubenbacher C, Saumweber D, Wagner-Manslau C, et al. Comparison of fluorine-18-fluorodeoxyglucose PET, MRI and endoscopy for staging head and neck squamous-cell carcinomas. *J Nucl Med* 1995;36:1747–1757.
2. Lapera M, Grenman R, Kurki T, et al. Head and neck cancer: detection of recurrence with PET and 2-[F-18]fluoro-2-deoxy-D-glucose. *Radiology* 1995;197:205–211.
3. Braams JW, Pruim J, Freling NJ, et al. Detection of lymph node metastases of squamous-cell cancer of the head and neck with FDG-PET and MRI. *J Nucl Med* 1995;36:211–216.
4. Chaiken L, Rege S, Hoh C, et al. Positron emission tomography with fluorodeoxyglucose to evaluate tumor response and control after radiation therapy. *Int J Radiat Oncol Biol Phys* 1993;27:455–464.
5. Greven KM, Williams DW, Keyers JW, et al. Distinguishing tumor recurrence from irradiation sequelae with positron emission tomography in patients treated for larynx cancer. *Int J Radiat Oncol Biol Phys* 1994;29:841–845.
6. Reisser C, Haberkorn U, Dimitrakopoulou-Strauss A, et al. Chemotherapeutic management of head and neck malignancies with positron emission tomography. *Arch Otolaryngol Head Neck Surg* 1995;121:272–276.
7. Strauss LG, Conti PS. The application of PET in clinical oncology. *J Nucl Med* 1991;32:623–648.
8. Barrington SF, Maisey MN. Skeletal muscle uptake of fluorine-18-FDG: effect of oral diazepam. *J Nucl Med* 1996;37:1127–1129.
9. Jabour BA, Choi Y, Hoh CK, et al. Extracranial head and neck: PET imaging with 2-F-18 fluoro-2-deoxy-D-glucose and MR imaging correlation. *Radiology* 1993;186:27–35.
10. DeGrado TR, Turkington TG, Williams JJ, et al. Performance characteristics of a whole-body PET scanner. *J Nucl Med* 1994;35:1398–1406.
11. Kapouleas I, Alavi A, Alves WM, Gur RE, Weiss D. Registration of three-dimensional MR and PET images of the human brain without markers. *Radiology* 1991;181:731–739.
12. Haberkorn U, Strauss LG, Reisser C, et al. Glucose uptake, perfusion and cell proliferation in head and neck tumors: relation of positron emission tomography to flow cytometry. *J Nucl Med* 1991;32:1548–1555.
13. Kubota R, Yamada S, Kubota K, Ishikawa K, Tamahashi N, Ido T. Intra-tumoral distribution of fluorine-18-fluorodeoxyglucose in vivo: high accumulation in macrophages and granulation tissues studied by microautoradiography. *J Nucl Med* 1992;33:1972–1980.
14. Provenza DV. Tongue and tonsils. In: Provenza DV, ed. *Oral histology: inheritance and development*, 2nd ed. Philadelphia: Lea & Feiger; 1986:418–429.
15. Bhaskar SN. Salivary glands. In: Bhaskar SN, ed. *Orban's oral histology and embryology*. 8th ed. St. Louis: C.V. Mosby; 1976:328–360.
16. Di Chiro G, Oldfield E, Bairamian D, et al. Metabolic imaging of the brain stem and spinal cord: studies with positron emission tomography using 18F-2-deoxyglucose in normal and pathological cases. *J Comput Assist Tomogr* 1983;7:937–945.
17. Kamoto Y, Sadato N, Yonekura Y, et al. Visualization of cervical spinal cord with 18FDG and high resolution PET. *J Comput Assist Tomogr* 1998;22:487–491.
18. Phelps ME, Huang SC, Hoffman EJ, et al. Tomographic measurement of local cerebral glucose metabolic rate in humans with (F-18) 2-fluoro-2-deoxy-D-glucose: validation of method. *Ann Neurol* 1979;6:371–388.
19. Vogl T, Dresel S, Bilaniuk LT, et al. Tumors of the nasopharynx and adjacent areas: MR imaging with Gd-DTPA. *AJR* 1990;154:585–592.
20. Pelizzari CA, Chen GTY, Spelbring DR, Weichselbaum RR, Chen CT. Accurate three-dimensional registration of CT, PET, and/or MR images of the brain. *J Comput Assist Tomogr* 1989;13:20–26.
21. Holman BL, Zimmerman RE, Johnson KA, et al. Computer-assisted superimposition of magnetic resonance and high-resolution technetium-99m-HMPAO and thallium-201 SPECT images of the brain. *J Nucl Med* 1991;32:1478–1484.
22. Scott AM, Macapinlac H, Zhang J, et al. Image registration of SPECT and CT images using an external fiduciary band and three-dimensional surface fitting in metastatic thyroid cancer. *J Nucl Med* 1995;36:100–103.
23. Pietrzyk U, Herholz K, Fink G, et al. An interactive technique for three-dimensional image registration: validation for PET, SPECT, MRI and CT brain studies. *J Nucl Med* 1994;35:2011–2018.
24. Wahl RL, Quint LE, Cieslak RD, Aisen AM, Koeppe RA, Meyer CR. "Anatometabolic" tumor imaging: fusion of FDG PET with CT or MRI to localize foci of increased activity. *J Nucl Med* 1993;34:1190–1197.
25. Wong WL, Hussain K, Chevretton E, et al. Validation and clinical application of computer-combined emission tomography with 2-[18F]fluoro-2-deoxy-D-glucose head and neck images. *Am J Surg* 1996;172:628–632.

Erratum

The labeling of "p" and "i" in Figure 2C in the article, "Dual-Head Pinhole Bone Scintigraphy," by Bahk et al. (*JNM* 1998;39:1444–1448) was printed incorrectly. The correct labeling would be the reverse of how they are marked.