ORIGINAL ARTICLE

Annals of Nuclear Medicine Vol. 17, No. 8, 633–640, 2003

Clinical usefulness of iodine-123-MIBG scintigraphy for patients with neuroblastoma detected by a mass screening survey

Tsuyoshi HASHIMOTO,* Kiyoshi KOIZUMI,* Takako NISHINA** and Kimihiko ABE***

**Department of Radiology, Hachioji Medical Center, Tokyo Medical University*
***Department of Surgery, Tokyo Metropolitan Hachioji Children's Hospital*
****Department of Radiology, Tokyo Medical University*

The purpose of this study was to evaluate the usefulness in a clinical setting of iodine-123-metaiodobenzylguanidine (^{123}I-MIBG) scintigraphy, planar and single photon emission computed tomography (SPECT) images, in patients with neuroblastoma as detected by a mass screening survey. ***Methods:*** ^{123}I-MIBG planar whole body images, and regional SPECT images of patients with neuroblastoma in 51 studies were reviewed. They were all detected by a mass screening survey performed in the 6th month after birth using vanil mandelic acid (VMA), and homovanillic acid (HVA) and the neuroblastoma had been confirmed by surgery. Scintigraphy was performed 24 hours after injection of 111 MBq of ^{123}I-MIBG. We assessed the accuracy of the planar whole body images in order to demonstrate the extent of the lesion and the correlation between the degree and extent of the lesions of ^{123}I-MIBG accumulation and clinical staging with tumor markers, such as urinary VMA, urinary HVA, serum neuron specific enolase (NSE) and serum lactate dehydrogenase (LDH). Additionally, we evaluated SPECT how useful supplemental SPECT might be in a clinical setting as compared with planar whole body images. ***Results:*** ^{123}I-MIBG planar whole body images revealed all 33 (100%) primary lesions, 4 of the 5 cases (80%) with liver metastasis, 3 of the 13 (23%) with lymph nodes metastasis and 1 of 3 (33%) with bone marrow infiltration. The extent and degree of accumulation correlated with the values of urinary VMA, urinary HVA and serum NSE. SPECT images helped to understand the positional relation in all cases and provided useful additional information for clinical staging in 7 cases. ***Conclusion:*** ^{123}I-MIBG scintigraphy with planar and SPECT images is useful for evaluating patients with neuroblastoma, following detection by a mass screening survey.

Key words: iodine-123-MIBG, neuroblastoma, mass screening