Summary

Evaluation of Clinical Utility of $^{123}$I-MIBG Scintigraphy in Localization of Tumors of Sympathetic and Adrenomedullary Origin

—A Report of Multicenter Phase III Clinical Trials—

Katsumi Ishii*1, Atsushi Kubo*2, Kiyoko Kusakabe*3, Hajime Murata*4, Hidekazu Masaki*5, Shigeharu Horike*6, Akira Hayashi*7 and Yuuko Hara*8

*1School of Medicine, Kitasato University
*2Department of Radiology, School of Medicine, Keio University
*3Department of Radiology, Tokyo Women’s Medical College
*4Division of Nuclear Medicine, Toranomon Hospital
*5Department of Radiology, National Children’s Hospital
*6Department of Radiology, School of Medicine, Kitasato University
*7Department of Surgery, Tokyo Metropolitan Kiyose Children’s Hospital
*8Department of Radiology, Tokyo Metropolitan Kiyose Children’s Hospital

Phase III clinical study was performed to evaluate clinical utility of $^{123}$I-MIBG in the localization of tumors in 48 patients with tumors of sympathetic and adrenomedullary origin, diagnosed or strongly suspected. Sixteen patients had pheochromocytoma, 23 had neuroblastoma, 7 had medullary carcinoma of the thyroid, and 2 had Sipple syndrome. In 3 out of 48 patients, $^{123}$I-MIBG scintigraphy was performed twice. The clinical utility of $^{123}$I-MIBG was evaluated in 50 cases. Out of 140 lesions, $^{123}$I-MIBG scintigraphy demonstrated 51 true positive, 79 true negative, 1 false positive, and 2 false negative. Seven lesions were not evaluable. Sensitivity was 96.2%, Specificity was 98.8%, and Accuracy was 97.7%. An acquisition between 4 hrs and a day after injection was adequate for tumor detection. Neither adverse reactions nor abnormal laboratory findings were noted in relation to $^{123}$I-MIBG injections. Our study indicates that $^{123}$I-MIBG is a safe and useful radiotracer for visualization and localization of tumors of sympathetic and adrenomedullary origin.

Key words: $^{123}$I-MIBG, Pheochromocytoma, Neuroblastoma, Medullary carcinoma of thyroid, Sipple syndrome.