

**Prognosis of hypertrophic cardiomyopathy: Assessment by ^{123}I -BMIPP
(β -methyl-p-(^{123}I)iodophenyl pentadecanoic acid)
myocardial single photon emission computed tomography**

Tsunehiko NISHIMURA,¹ Seiki NAGATA,² Toshiisa UEHARA,¹ Takakazu MOROZUMI,¹ Yoshio ISHIDA,²
Tomoaki NAKATA,³ Osamu IIMURA,³ Chinori KURATA,⁴ Yasushi WAKABAYASHI,⁴ Hiroki SUGIHARA,⁵
Katsuichi OTSUKI,⁵ Toyofumi WADA⁶ and Yoshinori KOGA⁶

¹Department of Tracer Kinetics and Nuclear Medicine, Osaka University, Medical School

²Department of Cardiology and Department of Nuclear Medicine, National Cardiovascular Center

³Second Department of Internal Medicine, Sapporo Medicine University

⁴Third Department of Internal Medicine, Hamamatsu University, School of Medicine

⁵Second Department of Internal Medicine, Kyoto Prefectural University of Medicine

⁶Third Department of Internal Medicine, Kurume University, School of Medicine

^{123}I -BMIPP (β -methyl-iodophenyl pentadecanoic acid) has shown unique properties for potential use in assessing myocardial metabolism. Previous basic and clinical studies demonstrated that the disturbances of myocardial metabolism precede the occurrence of myocardial perfusion abnormalities by using ^{201}Tl in hypertrophic myocardium. The present study was therefore undertaken to determine whether or not ^{123}I -BMIPP myocardial SPECT is useful in predicting the prognosis of hypertrophic cardiomyopathy (HCM) in 65 patients in 6 facilities. There were 33 patients with non-obstructive HCM, 12 with obstructive HCM, 12 with apical HCM and 8 with dilated-phase HCM. Fasted patients at rest received an intravenous injection of 111 MBq of ^{123}I -BMIPP. Twenty to thirty minutes later, myocardial SPECT was carried out. The BMIPP severity score (BMIPP SS) was evaluated semiquantitatively by using representative short axial SPECT images. We followed up the incidence of cardiac events for a mean period of 3.0 ± 0.6 years. Cardiac events occurred in 13 patients. Of these, 11 developed heart failure and 6 died (4 from heart failure and 2 from sudden death). The BMIPP SS in the dilated-phase HCM was significantly higher than that in the remaining HCM patients. The BMIPP SS for the survivors was significantly lower than that for the non-survivors. The BMIPP SS was particularly high in patients with fatal heart failure. Furthermore, there was a close negative correlation between the BMIPP SS and percent fractional shortening measured by echocardiography ($r = -0.49$). Finally, the mortality over the three years increased according to the extent of the BMIPP SS. In conclusion, these results indicate that the BMIPP SS is useful in evaluating the severity of HCM. We conclude that ^{123}I -BMIPP is a valuable metabolic tracer in predicting the outcome of HCM.

Key words: myocardial metabolic imaging, ^{123}I -BMIPP (β -methyl-iodophenyl pentadecanoic acid), hypertrophic cardiomyopathy, prognosis