

Significance of ^{123}I -MIBG scintigraphy as a pathophysiological indicator in the assessment of Parkinson's disease and related disorders: It can be a specific marker for Lewy body disease

Junichi TAKI,* Mitsuhiro YOSHITA,** Masahito YAMADA** and Norihisa TONAMI*

*Departments of *Biotracer Medicine and **Neurology and Neurobiology of Aging,
Kanazawa University Graduate School of Medical Sciences*

Recently, reliable and clear evidence for the usefulness of ^{123}I -MIBG scintigraphy in the diagnosis of Parkinson's disease (PD) has been accumulated and it has become increasingly popular as one of the most accurate means of diagnosing the disease. PD, one of the most common neurodegenerative disorders, is characterized by resting tremor, rigidity, bradykinesia or akinesia, and postural instability. The disease is characterized pathologically by distinctive neuronal inclusions called Lewy bodies in many surviving cells of dopaminergic neurons of the substantia nigra pars compacta and other specific brain regions. Furthermore Lewy body type degeneration in the cardiac plexus has been observed in PD. In PD, cardiac MIBG uptake is reduced markedly even in the early disease stages; therefore, MIBG imaging can be used as an indicator of the presence of PD rather than disease severity. Other parkinsonian syndromes such as multiple system atrophy, progressive supranuclear palsy, and corticobasal degeneration demonstrate normal cardiac MIBG uptake or only mild reduction of MIBG uptake, indicating that MIBG imaging is a powerful method to differentiate PD from other parkinsonian syndromes. Dementia with Lewy bodies (DLB) also shows severe reduction of MIBG uptake, whereas Alzheimer's disease (AD) demonstrates normal MIBG uptake, permitting differentiation of DLB from AD using MIBG scintigraphy. In pure autonomic failure, which shares similar pathological findings with PD and is thought to be associated with diffuse loss of sympathetic terminal innervation, cardiac MIBG uptake also decreases markedly. Considering all the data together, marked reduction of cardiac MIBG uptake seems to be a specific marker of Lewy body disease and thus extremely useful in the differentiation from other diseases with similar symptoms without Lewy bodies.

Key words: ^{123}I -MIBG, Parkinson's disease, Lewy body disease, multiple system atrophy, dementia with Lewy bodies