ORIGINAL ARTICLE

Annals of Nuclear Medicine Vol. 14, No. 3, 199–203, 2000

Relationship between striatal [^{123}I]β-CIT binding and four major clinical signs in Parkinson's disease

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We investigated the correlation between clinical severity and striatal [^{123}I]β-CIT binding in 12 patients with Parkinson's Disease (PD: 6 men and 6 women, age: 65 ± 7 years, Hoehn & Yahr stage: 1 to 3). The clinical severity of PD patients was measured with the Unified Parkinson's Disease Rating Scale (UPDRS) after withdrawal of antiparkinsonian medication at least 12 hours before assessment. [^{123}I]β-CIT binding in the caudate and putamen was measured at 3 hours [V''_3 (day 1)], and at 24 hours [V''_3 (day 2)] after tracer injection with small square ROIs. The specific striatal uptake index (day 2) was calculated with large square ROIs that encompassed the whole striatum. The best correlation ($r = -0.82$, $p < 0.0012$) was between putamenal V''_3 (day 2) and the motor UPDRS scores. When the motor UPDRS scores were divided into four subscales, bradykinesia was the only sign that correlated significantly with putamenal V''_3 (day 2) ($r = -0.81$, $p < 0.002$). [^{123}I]β-CIT SPECT is a useful marker of disease severity in PD with potential utility in the serial monitoring of disease progression.

Key words: Parkinson's disease, single photon emission computed tomography, β-CIT, dopamine, transporter