ORIGINAL ARTICLE

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Decreased striatal D_2 receptor density associated with severe behavioral abnormality in Alzheimer's disease

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Objectives: Since patients manifesting behavioral and psychological symptoms of dementia (BPSD) are a burden for their families and caregivers, the underlying neurobiological mechanism of this condition should be clarified. Using positron emission tomography (PET), we previously reported that wandering behavior in dementia was associated with a disturbed dopaminergic neuron system. We herein investigated the relationship between the severity of BPSD and the striatal D_2 receptor density in Alzheimer's disease (AD). ***Methods:*** Ten patients with probable AD as per the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) and the AD and Related Disorders Association (ADRDA) criteria and five normal subjects were examined with PET. The tracer used was [^{11}C]raclopride (D_2 antagonist). The uptake of [^{11}C]raclopride was calculated as the estimation of binding potential (BP) of the striatum to the cerebellum. The AD patients were institutionalized in multiple nursing homes, and their BPSD were evaluated by the Behavioral Pathology in AD Frequency Weighted Severity Scale (BEHAVE-AD-FW) scale (Reisberg). ***Results:*** There was a significant inverse Spearman's correlation between BEHAVE-AD-FW score and the BP, especially between the score of the behavioral domain and the BP values. The BP was found to be lower in severer BPSD patients. ***Conclusions:*** Patients with AD who manifest severe BPSD may have some dysfunction of striatal dopamine metabolism compared with those without BPSD.

Key words: Alzheimer's disease, dopamine, BPSD