INTRODUCTION

Zolpidem has been reported to have unexpected benefits on motor disorders in patients with PD[1]. However, the mechanism underlying this phenomenon is uncertain. We herein report a case with PD who developed fluctuating neuropsychiatric and motor symptoms after bilateral subthalamic nucleus (STN) deep brain stimulation (DBS). In addition to motor deficits, the neuropsychiatric symptoms were ameliorated by zolpidem. FDG-PET was conducted to illustrate the situation of cerebral metabolism altered by zolpidem.

CASE REPORT

The 61-year-old housewife was diagnosed to have PD for 12 years with initial presentation of clumsiness and rest tremor of right limbs. She was referred to our hospital in March 2009 due to shortening of drug beneficial period since 3 years ago and on-phase dyskinesia in recent 2 years. The medications at the time of referral included levodopa (1000 mg/day), biperdin (8 mg/day), selegiline (10 mg/day) and zolpidem 10 mg at bedtime. Bilateral STN DBS was conducted on 18 June, 2009. Levodopa (750 mg/day), selegiline and zolpidem were maintained during admission. Fluctuating spells of mental confusion were developed on the next day after surgery. She might sometimes be inertia for several hours and then shifted into confusion state with incoherent speech and fearing of being killed in another few hours. Electric stimuli via DBS electrodes were delivered with parameters of [2 volts, 60 μs, 130 Hz] on bilateral STN 32 days after DBS. The incoherent behaviors and motor fluctuation remained to occur. Zolpidem was administrated as a hypnotic agent since the third day after surgery. The beneficial effect of zolpidem on her neuropsychiatric and motor symptoms was detected incidentally in early July 2009. She could chat normally with her caregiver and walk with assistance after taking zolpidem. The beneficial period may last for 2 hours. (Figure 1) Zolpidem was then given in dosage of 10 mg three times per day. The Neuropsychiatric Inventory[2]

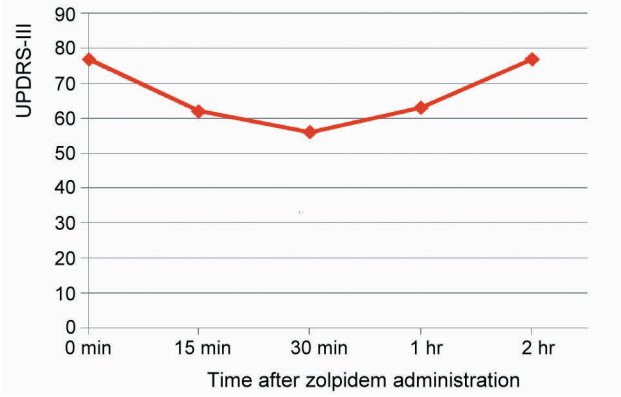

Figure 1. Time course of zolpidem effect during 'DBS off' and 'dopaminergic agents off' states. Motor function is improved about 5 minutes after the administration of zolpidem and the beneficial effect lasts for 2 hours. Her cognition is ameliorated during this period. The UPDRS-III was evaluated at 15 minutes, 30 minutes, 1 hour, and 2 hours after zolpidem administration.

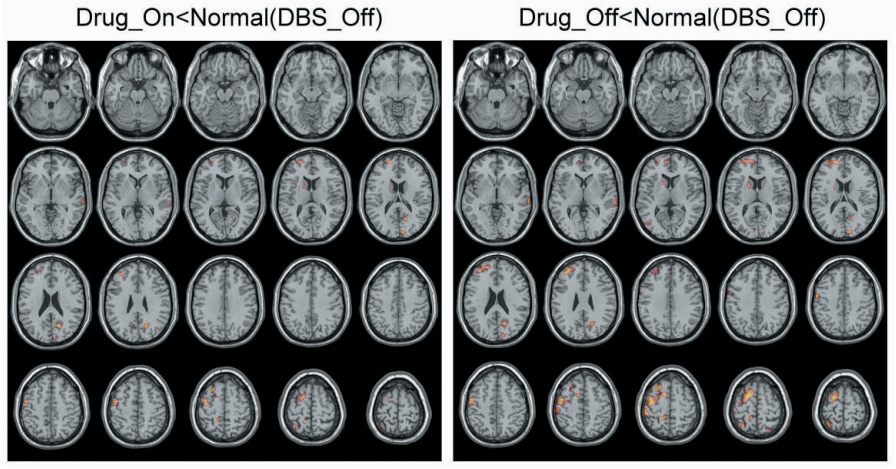

Figure 2. The results of FDG PET/CT during zolpidem 'on' (left panel) and 'off' phase (right panel).