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Case report

# Effects of clonazepam on self-induced photoparoxysmal responses

Yoshiaki Saito [a,*], Yuko Matsuda [a], Kenji Sugai [a], Eiji Nakagawa [a], Akihiko Ishiyama [a], Takashi Saito [a], Hiforumi Komaki [a], Masayuki Sasaki [a], Akiko Miyata [b]

[a] *Department of Child Neurology, National Center of Neurology and Psychiatry, Tokyo, Japan*
[b] *Saiwai Child Clinic, Tokyo, Japan*

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**Abstract**

A 5-year-old girl exhibited daily episodes of repetitive blinking lasting 5–10 s. Electroencephalography (EEG) revealed marked photoparoxysmal responses (PPR) at 3–20 Hz of photic stimulation and diffuse spike-wave bursts during sleep. A 24-h video EEG identified 11 episodes of repetitive blinking, 3 of which resulted in widespread spike-wave discharges. These suggested that the behavior of the patient represented self-induction of PPR. Valproate sodium was ineffective in decreasing PPR, as revealed by EEG, and the frequency of blinking episodes, but clonazepam attenuated PPR and significantly decreased the blinking behavior.


*Keywords:* Photosensitivity; Self-induction; Photoparoxysmal response; Eyelid; Blinking

## 1. Introduction

Self-induction of epileptic seizures is common in reflex epilepsies, particularly in photosensitive epilepsy characterized by visual stimuli-provoked seizures [1]. The patients use triggering maneuvers including hand and/or body waving and blinking and often look at specific light sources including the sun and television to provoke seizures [1]. These patients often have intellectual disabilities; however, those with normal intellect also indulge in this behavior because of the pleasurable sensations occurring during seizures, resulting in intractable epilepsies.

Photoparoxysmal responses (PPRs) are epileptiform responses on electroencephalography (EEG) to intermittent photic stimulation, which are frequently observed in epileptic and nonepileptic children and which should be distinguished from photosensitive epilepsy [2,3]. Only 3% nonepileptic children with PPR eventually develop epileptic seizures [4].

We report the case of a girl who self-induced PPR by repetitive blinking. This phenomenon has not been previously reported in the literature, and a treatment strategy has also not been established. We hope that our experience will be broadly recognized.

## 2. Case report

A 5-year-old girl exhibited repetitive blinking for 5–10 s while talking or watching television. The blinking was not accompanied by impaired consciousness or motion arrest, and she could talk while blinking. When her parents asked her about the reason of blinking and sensation during the blinking behavior, she stated "I was thinking something" or "I don't know". Ocular position was often deviated upward during blinking. The blinking episodes occurred more often during outdoor activities. The frequency of these episodes gradually

* Corresponding author. Address: Department of Child Neurology, National Center of Neurology and Psychiatry, 4-1-1 Ogawahigashi-Cho, Kodaira, Tokyo 187-8551, Japan. Tel.: +81 42 341 2711; fax: +81 42 346 1705.
*E-mail address:* saitoyo@ncnp.go.jp (Y. Saito).

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increased to several times per day, particularly during outdoor activities at her daycare center.

Interictal EEG was performed when the patient was 5 years and 5 months old. Photic stimulation was applied with a flickering light placed 30 cm in front of the patient with her eyes closed. The light was applied at increasing frequencies of 3–10, 12, 15, 20, 25, and 30 Hz, each lasting 10 s with intervals of 7 s between the stimulus trains. EEG revealed a small number of parieto-occipital and frontal spike waves during wakefulness (Fig. 1A and B) and diffuse spike-wave bursts during sleep (Fig. 1C). Photic stimulation provoked

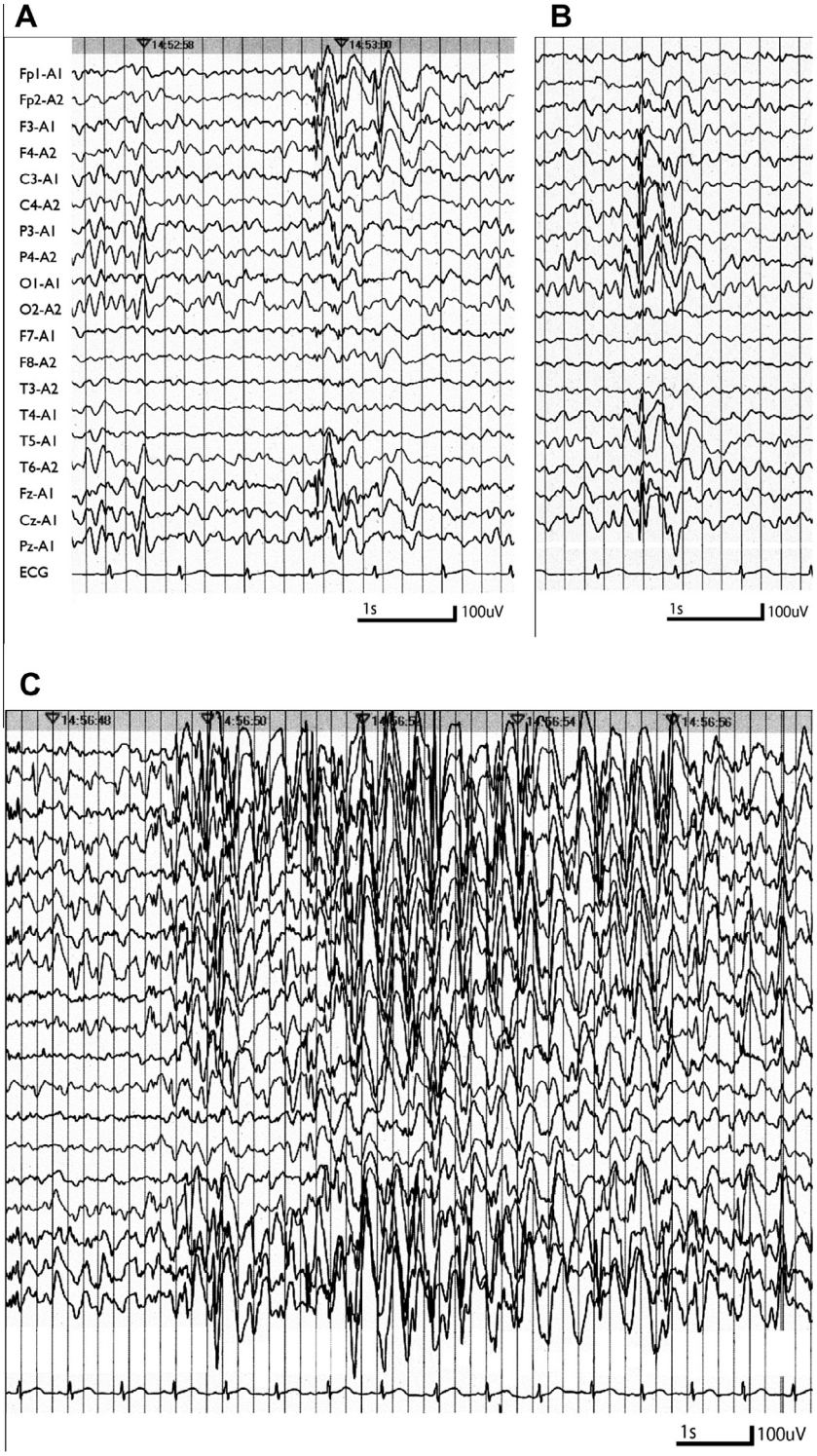


Fig. 1. Interictal electroencephalography when the patient was 5 years and 5 months old. Brief trains of frontal (A) and occipital (B) predominant spike waves during wakefulness and diffuse spike-wave bursts during sleep (C) were observed. The montage of electrodes are identical, as seen in Figs. 1–3.