"Bright flashes in the dark": a close time-locked relationship between posterior lateralized periodic discharges and visual flashes

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ABSTRACT

A 60-year-old man with right occipital meningioma was referred due to visual hallucinations which appeared several months ago. He complained of left hemifield brief visual flashes occurring regularly, about one per second, without any other symptoms. Clinical examination revealed left hemianopsia, which was already known. During the EEG recording, the patient was asked to report on each flash he perceived by taping on a piezoelectric accelerometer. *Figure 1* shows the time-locked relationship between right posterior epileptiform discharges on EEG and perception of visual flashes, as evidenced by the taping records. For at least one tap, the patient appeared to precede the flash, probably due to its periodic occurrence making it predictable. Neural correlates of hallucinations are difficult to establish directly, since there is no reliable marker except for the patient's verbal report. Although visual

flashes are typically reported during occipital seizures (Manford and Andermann, 1998), we are not aware of any direct evidence which clearly links (in a time-locked fashion) transient EEG discharges with visual flashes. Only with direct stimulation of the visual primary cortex can elementary visual hallucinations be evoked; in the pioneering work of Penfield and Rasmussen, the authors reported such hallucinations as "a brilliant ball, a star, a streak, a wheel, a spot, or a flash, a shadow, a light" (Penfield and Rasmussen, 1950).

Key words: visual hallucination, posterior seizure, spikes

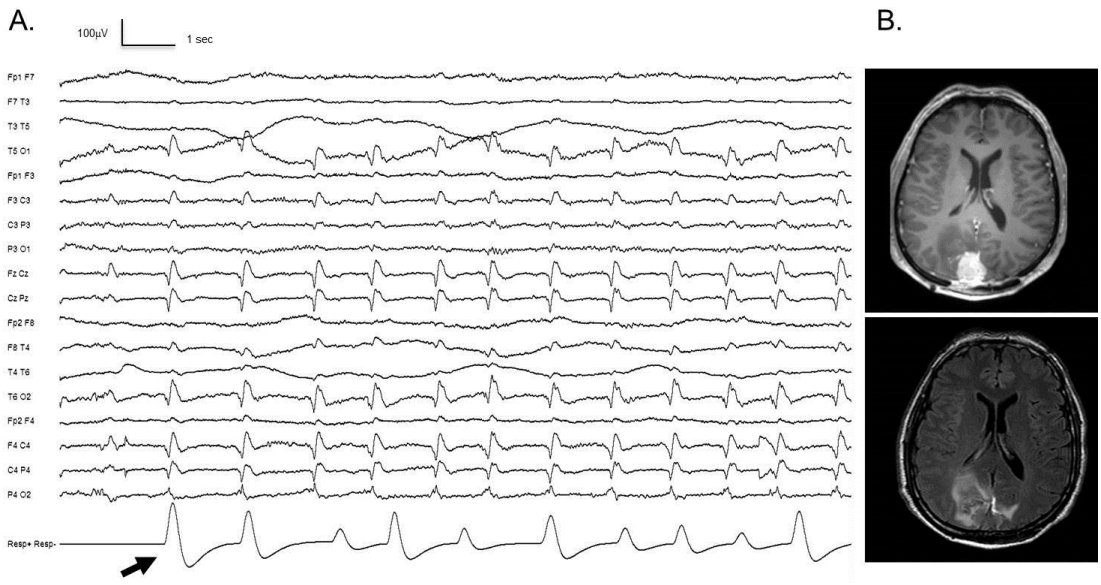

Figure 1.

(A) A 15-second-long EEG trace showing right posterior periodic discharges with time-locked tapping (black arrow) on a piezoelectric accelerometer. (B) Axial T1 gadolinium and FLAIR MRI showing occipital meningioma.

Disclosures.

None of the authors declare any conflicts of interest.

References.

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